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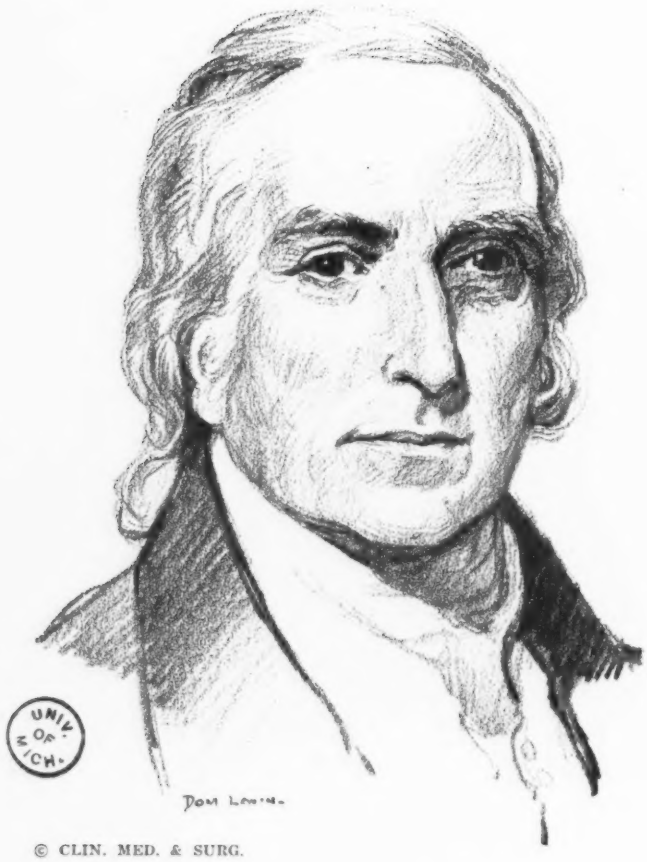

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PHILIP SYNG PHYSICK, A.B., M.D.

CLINICAL · MEDICINE
AND · SURGERY

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Philip Syng Physick

The Father of American Surgery

THERE seems to be a general impression, even today, that surgeons tend to be rather cold-blooded and brutal. Such an idea is far wide of the truth and was so, as a general proposition, even when surgery was almost wholly an art, and before it was made humane by the discovery of anesthetics and asepsis. The "Father of American Surgery" was, indeed, a man of conspicuous kindliness, gentleness and urbanity, even in a day when those qualities were highly prized as the distinguishing marks of a gentleman.

The background of Philip Physick's environment no doubt contributed materially to his success. His father was a wealthy Englishman of high social rank, who came to America in its early days and was intimately associated with the Penn family, so young Philip, who was born July 7, 1768, began life under most gracious auspices and moved among people of culture and refinement all the days of his life.

When he was eleven years old he was sent to a Quaker school and, in due time, to the University of Pennsylvania, where he received the degree of Bachelor of Arts in 1785.

In those days, surgery was in process of becoming a respectable calling and, for some reason (perhaps because Philip's hands were strong and dextrous), his parents decided for him that he was to become a surgeon, and sent him to Dr. Kuhn, then professor of the theory and practice of medicine at the University of Pennsylvania, to learn the fundamentals.

The provincial education available in the raw, new Land did not, however, satisfy people of the substance and quality of the Physicks, so Philip's father took him to England, in 1789, to complete his medical and surgical studies and, by his social influence, arranged for the boy's acceptance as a personal and special pupil of John Hunter. It is related that, when Mr. Physick asked Hunter what books his son would need, that teacher of great surgeons led the astonished pair to the dissecting room and, pointing to the corpses, answered, "Sir, there are the books your son must study."

Hunter gave young Physick exceptional opportunities to show his ability, which he proceeded to do; and when, after a year as house surgeon at St. George's Hospital, this promising pupil received the diploma of the Royal College of Surgeons, he became, for a time, Hunter's personal

assistant, until, in 1791, he went to the University of Edinburgh to complete his formal medical education, receiving his degree of Doctor of Medicine the next spring.

Soon after his graduation, Dr. Physick returned to Philadelphia and began to practice, but had few patients until the epidemic of yellow fever reached that city in 1793, when his services were so successful that he became physician to one of the hospitals, though he almost lost his life from the disease which started his medical career. As a matter of fact, he contracted the disease again during the next Philadelphia epidemic and was never a well man thereafter.

In 1794 he was appointed surgeon to the Pennsylvania Hospital, and this was only the first of a succession of professional honors, which included: physician extraordinary to the Philadelphia Alms House Infirmary; president of the Phrenological Society of Philadelphia (1822) and of the Philadelphia Medical Society (1824); member of the Royal Academy of Medicine of France (1825)—he seems to have been the first American to receive that honor—and honorary member of the Royal Medical and Chirurgical Society of London (1836).

Physick wrote little (no books whatever), and such of his writings as did appear were brief and to the point. He seems to have had a certain contempt for men who wrote long and rambling articles and padded books.

It was through the efforts of this man that, in 1805, the chair of surgery was separated from that of anatomy in the University of Pennsylvania, and he was the first to fill it, retaining his professorship until about 1820, when failing health compelled him to give up teaching. To this task he brought from Europe the most modern ideas, technics and instruments and he made himself familiar with them all. He was, moreover, a bold but careful, precise and resourceful operator of the days before antiseptics and anesthetics.

Several important contributions to medical knowledge were made by Dr. Physick, as well as a number of improvements in the existing instruments. He was an expert lithotomist (one of his patients for this operation was Chief Justice John Marshall) and seems to have treated cataract by a modern method—extraction of the diseased lens. He was the first man to perform the operation for artificial anus and to describe diverticula of the rectum; he is probably best remembered, however, for having been one of the first, if not the very first, to use absorbable ligatures made of buck and kid skin, and the first to wash out the stomach with a tube and syringe. He was always an enormously hard and sincere worker, often rising at four o'clock in the morning.

The name of Philip Syng Physick, the surgeon, who passed to his rest December 17, 1837, stands along with that of Benjamin Rush, the physician, in the list of the notable men who established the practice and teaching of medicine in the United States. From our point of view these great pioneers made many serious mistakes, but one wonders if our present-day practices will appear as basically and generally reasonable to the clinicians of A.D. 2,032 as those of these older physicians and surgeons now seem to us.

What we *are* is much more important than what we say.—Bishop Irving S. Cooper.

Fever Therapy With Sulphur

IT IS unnecessary, today, to remind any truly progressive physician of the important place which pyretotherapy is making for itself in the treatment of neurosyphilis (tabes and paresis), as well as non-syphilitic diseases of the central nervous system, such as epidemic encephalitis, disseminated sclerosis, parkinsonism and dementia precox. It has also been used with success in the rheumatoid affections—arthritis and chorea.

Von Jauregg aroused interest in the

method and used malarial infection to produce the therapeutic fever. Other workers suggested and used infections with rat-bite fever and intravenous injections of typhoid vaccine and Coley's fluid; and then came the physical therapists, with diathermy and later (still in the experimental stage) the radio wave.

All of these methods, while distinctly valuable, have drawbacks and limitations. The infections are, of course, dangerous and hard to control. The reactions from typhoid vaccine and Coley's fluid are generally so severe that it is advisable to give them only to patients in hospitals. Diathermy fever, also, is a hospital procedure, requiring expensive and heavy apparatus and trained operators.

There now seems to be a way in which this valuable therapeutic resource can be used with safety and success by general practitioners, treating patients in their homes—the intramuscular injection of suspensions of sulphur in sterile olive oil.

Sulphur-in-oil is no longer an experiment, having been used in hundreds of cases of the types which are recognized as being amenable to pyretotherapy, with as good results as those reported following fever produced by other methods. It is easy to administer; the general and local reactions are, comparatively, very mild; and the resulting fever is sufficiently high for therapeutic purposes (103° to 104°F., as a rule) and is sustained for from twelve to forty-eight hours — a very important feature.

Another factor of great—perhaps vital—import is that injections of sulphur-in-oil give rise to a strong leukocytosis, the white-cell count rising, sometimes, as high as 76,000 per cubic millimeter. In view of the part which the phagocytes are now generally believed to play in the control of infections, this fact should be constantly borne in mind.

The sulphur, in a finely-divided state, is suspended in sterile oil, as a rule in a concentration of one percent (when the larger doses are given, a two-percent suspension is often used, in order to reduce the quantity of oil), and is injected, with the usual technic and precautions, deep into the muscles of the buttocks or the outer aspects of the thighs.

The dose varies in the hands of different workers. Shilvock and Douthwaite give 0.5 cc. as the initial dose, repeating the injections on alternate days, with an increase of 0.5 cc. at each dose. Fenwick begins with 1.0 cc. and gives two injections a week, increasing each dose by 1.0 cc. The increases are, of course, conditional upon the individual patient's reactions. By either method, ten injections constitute a course, which may be repeated, if required, at intervals of two or three weeks.

After the injection (which is best given in the morning), the temperature begins to rise in from six to eight hours, reaching a maximum of about 104°F. in from twelve to eighteen hours after the injection. From this point the defervescence is very gradual, requiring from twelve to forty-eight hours (according to the dose and the patient) to decline from its maximum level to the normal. This is as it should be.

During the fever period, slight rigors occur in a fair proportion of cases, and sweating is rather general. Loss of appetite, mild nausea and vomiting and slight delirium occasionally mark the height of the fever, but these are of brief duration and not alarming. Locally, some pain and stiffness are usually present. There is little or no disturbance of the heart or respiration. No serious accident has yet been reported with this form of therapy.

It appears, therefore, that, in sulphur-in-oil, we have a preparation which can be used, safely and effectively, by the general practitioner, as well as by the specialist who works in a hospital or institution, and it would seem reasonable to expect that fever therapy will now come into much wider use, in appropriate cases, then has, hitherto, been practicable.

Social and Moral Age

IT WAS not so long ago that, when one asked how old a person was, no thought was in the mind of the questioner or the questioned, other than as to the number of moons that had waxed and waned since the physical body of the one under discussion first appeared as a separate entity in this delightful world.

Now matters are more complicated. We have come to recognize that a man is more than his physical body, having a variety of quite distinct vehicles of expression—bodies, if one please—whereby he comes into contact with the different aspects of the universe—the mental, emotional, moral, social and perhaps several others, in addition to the physical. Moreover, all these various "bodies" have varying degrees of awareness, power and utility, according to their stage of development, and *they do not all develop by any means simultaneously.*

We have been so accustomed, of late, to hearing the subject of mental age discussed, that it does not strike us as being at all fantastic to think of a person with a fully-developed physical body housing the mind of a child. It is not, however, so common for us to think of an individual who has a mature and well-functioning mind, as well as body, and yet exhibits the moral and social reactions of a child or a savage.

If one stops to think and observe, one finds that the two last-used terms are, on a moral (meaning conduct which conforms to the standards of the time and place) and social basis, practically synonymons. The child and the savage are unmoral and asocial — *not* immoral and antisocial. Whenever either desires to do or to possess any particular thing, he strikes straight toward his goal, with no thought or care as to whether its achievement will be conductive to his own good or the reverse, to say nothing of the possible effects upon the happiness and wellbeing of others, even those most intimate. Older children must be classed with the barbarians, in whom the dawning of moral and social consciousness may be observed.

A little thought along this line will bring the conviction that there are, among the populations of all countries, hundreds of thousands of people who are morally and socially deficient—who are, according to these criteria, children of from one to six years, no matter how big and mature their physical bodies may be.

If we give this idea some study we are reasonably certain to recognize that a large percentage of life's misfits — the "failures" and "ne'er-do-wells" —as well as most of the socalled criminals, fall in this class. They are people whose conduct would be perfectly in keeping with the conditions obtaining in Central Africa—or in the nursery — but does not fit into the picture of modern, more or less civilized society.

These people are not insane, any more than the mental defective—the feeble-minded or moron—is insane, but *they are not normal, adult human beings,* and as long as we try to deal with them as if they were, our attempts will be, at best, futile; and, at worst, foolish and often cruel.

We have no panacea to offer, just now, for the prophylaxis and treatment of immaturity in these directions. Our sole attempt, at this time, is to call attention, *strongly,* to the presence of people like this in the structure of our body politic; for until we clearly and consistently recognize their existence and the nature of their abnormalities, no efforts can or will be made to deal with them in a reasonable and effective manner.

Knowledge and understanding of mental deficiencies have resulted in a much more enlightened and hope-inspiring attitude toward them; and it seems logical to suppose that, when the presence of moral and social defectives in our midst is equally well recognized, and the nature of their deformity equally well understood, suggestions will be made and methods form-

ulated, whereby their numbers may be reduced to a minimum and their disastrous activities controlled and directed into lines which will be profitable to society in general.

Whosoever believes that churches, or books or institutions, or customs, are more valuable than men is a Pharisee.—Henry Ward Beecher.

Training

WHEN a boxer or wrestler goes into the ring or a sprinter upon the track, he spends anywhere from two minutes to half an hour in violent exertion to accomplish a certain end. And that is all the admiring onlookers see of his performance.

Unless, however, he has spent weeks or months of hard and rigorous training for that climactic effort, the chances that he will win any bouts or break any records are mighty slim. Moreover, if he intends to engage in any other contests, he must keep in training *all the time*, or he will soon be relegated to the great, inglorious company of has-beens.

Every time a physician sees a patient, it is (or ought to be) a climactic effort; but there can be no climax without something to lead up to it, and the way many doctors spend the eight or ten waking hours each day when they are not actually seeing patients, does not, in any important particular, resemble the activities of an athlete who is preparing for an important struggle.

Setting aside eight hours for sleep and another four for meals and salutary recreation, every physician ought to spend at least two or three hours *every day* in hardening his mental sinews, nourishing his intellect with sound pabulum and increasing the quickness and certainty of his reasoning powers, which correspond to the fighter's punches.

Not all of this time is necessarily spent in an easychair under the study lamp—nor should it be. As one goes from one patient to another or walks or drives home from the office, one shoud be sharpening one's wits against the problems which the day has brought for solution and preparing to make a new onslaught again on the morrow. The *Seminar* makes a first-rate punching bag.

The time spent in a consultation with one patient may be thirty minutes or less, but unless the physician has spent weeks of sincere study and thought in preparation to see that patient (or one like him), the probability that he will gain much benefit from the interview are not bright; and unless he gets in some real training, in preparation for that patient's second call, it is quite likely that there will not be a third.

Those who can get this spirit of daily training for a vitally important contest—that with disease—and can add this to a clear-cut ideal and enthusiasm; and can then make all these a part of each day's life and work, will go very, very far.

The victory of success is half won when one gains the habit of work.—Sarah A. Bolton.

May Day and Child Health

THE choosing of May Day, as a time for the special stressing of the care and protection of children, seems singularly appropriate. The burgeoning of the earth as the real springtime comes, beautifully typifies the tender beginnings of human lives, which must be cared for and watched over by the stronger ones, that they may grow into a sound and fruitful maturity.

In these trying times, many are finding that it is far more satisfying to *share with* our neighbors than to "keep up with" them—and this is a splendid lesson for all of us to learn.

It is a charming idea to fill baskets with flowers and bestow them upon our friends as the earth awakes from her winter sleep, but more substantial tokens of our interest in the welfare of children are needed. The little ones require adequate nutrition, especially abundance of clean, safe milk, and their mothers require care while they carry

them and bring them to birth—and afterward. They need sunshine, too, and happy, *constructive* play, wisely supervised, but not forced upon them.

What are we physicians, who ought to have a wide knowledge of these matters and should be leaders in our communities, doing or going to do about it?

Let May Day—Child Health Day—focus our attention upon the possible measures for giving mothers better prenatal, natal and postnatal care, and for affording to the children an adequate and intelligently chosen diet, with enough sunshine and safe, health-giving play. And having thought upon these things, let us not stop there, but give our active assistance by setting in motion or facilitating the various activities which will bring these beneficient and necessary conditions into full reality.

Cooperation is not a sentiment; it is an economic necessity.—Charles Steinmetz.

Dr. Bevan and Alcohol Prescriptions

PROMINENT men are, like all the rest of us, human beings, with individual opinions and prejudices but, because of their prominence, they are or should be extremely guarded in the public expression of these opinions, unless they are backed up by ample and acceptable proofs, for the general public looks at a well-known name and assumes, without any logical reason, that its possessor must be an authority on everything under heaven.

A past-president of the American Medical Association, Dr. Arthur Dean Bevan, of Chicago, has recently illustrated the dangers of publishing one's prejudices as if they were facts, by appearing before a committee of the United States Senate with the statement that a large percentage of the physicians of the country are assisting a large percentage of the pharmacists in bootlegging alcoholic liquors.

We all realize that there are both doctors and druggists who are willing to wink at the law, if such winking proves remunerative; but any one who knows the members of these two great professions at all well, is aware that such individuals are relatively very few and do not enjoy the confidence and admiration of their fellows.

The results of such befouling of his own professional nest must have been rather painful to Dr. Bevan, if he is at all sensitive to the opinions of his thoughtful confreres. In the *Journal of the American Medical Association* for February 13, an editorial criticizes his conduct with justice and restraint; and the March issue of the *Illinois Medical Journal* comments on the whole matter at length, publishing resolutions of censure adopted by the Chicago Retail Druggists' Association and the Medical Society of the County of New York, as well as a letter refusing him permission to repeat his misleading and unfounded statements in the columns of the J.A.M.A.

That man is wise who gives careful thought to his words before they are spoken or written, especially when they reflect discredit upon any other man or group of men.

It is far easier to destroy, by a few ill-considered words, a reputation for sanity, judgment and sincerity, than it is to build one up.

LEADING · ARTICLES

Endocrine Types

By Hal Bieler, M.D., Pasadena, Calif.

A PATIENT is always a more interesting study if he can be classified or grouped under headings according to types. The ancients used groupings based on the form of the individual—whether he was thin or fat or, according to the temperament, as choleric, phlegmatic, sanguine or melancholic. In a foreword to the volume entitled "Constitutional Inadequacies," by Nicola Pende, professor of clinical medicine at the Royal University of Genoa, Italy, Dr. George Draper states[1]:

"When, in 1880, Achille De Giovanni began to emphasize the importance of studying the constitution and personality of sick people, as well as their diseases, he reawakened clinicians to a consideration of one of their most obscure and significant problems. His work, inspired at many points by the great German anatomist Beneke, was also reminiscent of implications to be found in the writings of Hippocrates and Galen and of Elsoholtzius, who held the chair of medicine at Padua in 1650. De Giovanni, however, recognizing the inadequacy of vague impressions, seized upon the technic of the new science of physical anthropology and applied it to the clinic. He thus not only became, himself, a profound student of human beings, but established the Italian school of clinical anthropology. The seed of his teachings fell upon fertile soil and was developed by his brilliant pupil Viola, now professor of medicine at Bologna."

Nicola Pende is a pupil of Viola's. His classification of individuals based upon physical and endocrine characteristics is intensely interesting.

Dr. Cobb of London, in the introduction to his book, "The Glands of Destiny"[2] states:

"In many works dealing with personality, the influence of the physical side is entirely ignored. In some works it is tacitly admitted, but very little emphasis is laid upon the ductless glands. In the past, so little has been known of the action of these glands, that it has not been possible even to recognize grave disorders of the glands and their effect on the personality. With the recognition of the ductless glands and their secretions, some clear-cut ideas of personality have been formed. The thyroid, when in excess or deficiency, produces two different mental pictures; equally is this true of the pituitary. Although we are only on the fringe of the subject, there are other personalities which we can describe, although part of our descriptions must rest on surmise. The future will, no doubt, be able to prove or disprove many of these hypotheses which we are beginning to formulate."

Dr. Louis Berman, of Columbia University, has written[3]:

"All normal, as well as abnormal, individuals are classifiable according to the internal secretions which rule in their make-up. Individuals, families, races and nations show definite internal secretion traits, which stamp them with the quality of difference. The internal secretion formula of an individual may, in the future, constitute his measurement, which will place him accurately in the social system."

Today, even those comic supplements to the journals of science, known as the newspapers, often illustrate and correctly diagnose more or less advanced glandular types, such as giants, dwarfs, myxedematous individuals, acromegalic persons, various glandular obesities and patients suffering from the hypoadrenal state known as Addison's disease. The public is beginning to realize the truth of the statement, made long ago by Dr. Barker, of Johns Hopkins[4], that "Our stature, the kinds of faces we have, the length of our arms and legs, the shape of the pelvis, the color and consistency of the integument, the quantity and regional location of our subcutaneous fat, the amount and distribution of hair on our bodies, the tonicity of our muscles, the sound of the voice, the size of the larynx and the emotions to which our ex-

terior gives expression, all depend, to a large extent, upon the functioning, during the early developmental period, of the endocrine glands."

The main object of this paper is to attempt to correlate the studies, observations and conclusions of the many workers in endocrinology and biochemistry, both here and abroad, and endeavor to straighten out and simplify the evidence at hand, so that the practical clinician can make use of the results. For, at the present time, it is possible not only to type patients more carefully according to their glandular characteristics, but also to predict possible avenues of vicarious elimination of toxins, upon many of which the socalled symptoms and signs of various diseases depend.

The Adrenal Glands

There is no doubt, at present, that, of all the endocrine glands, the adrenals are the most necessary for sustaining life and health. Lately it has been found that, of the two portions, cortex and medulla, the cortex is the more vital.

The cortex of the adrenal is an integral part of the sympathetic nervous system. Its numerous connections with the solar plexus have been thoroughly identified. At about the seventh month of fetal life, the adrenal glands are equal to the kidneys in size; at birth slightly smaller; and during life they gradually diminish in size until. in the aged, they can hardly be identified at autopsy. It has been stated that life in man is impossible without the adrenal secretion in the blood stream. Indeed, we know the sudden fatal collapse following a hemorrhage into the adrenals, as well as we know the creeping death of the patient with Addison's disease.

The chemistry of life itself depends upon the process of oxidation. The secretion of the adrenal glands is the hormone which makes oxidation in the body cells possible. The adrenal glands determine *whether the fire shall burn or not*. It would be assuming too much to think that all the physical and chemical functions of the adrenal glands have been discovered. The more important functions which have been studied and recorded to date are as follows:

1.—Control of oxidation of all body cells, regulating
   - A. Nerve energy (oxidation of phosphorus in the brain and nerve tissue);
   - B. Physical energy and heat (oxidation of carbon in the muscles);
   - C. Special organ function (oxidation in liver and kidneys);
   - D. Life of every body cell (impossible without oxidation).

2.—Control of muscle tonus:
   - A. Voluntary muscles (bodily strength).
   - B. Heart muscles (circulation, blood pressure).
   - C. Involuntary muscles (peristalsis, uterine tone).

3.—Controls number of circulating blood cells, red and white.

4.—Controls clotting of blood (probably with parathyroids).

5.—Controls degree of body immunity.

6.—Controls rate of red cell sedimentation.

The Adrenal Type

Most of the information concerning the characteristics of the adrenal type of person has been the result of three sources of study; patients suffering from Addison's disease, adrenalectomized animals; selective breeding of animals; and patients with adrenal tumors. Among the animals, through careful breeding to augment adrenal strength, such examples as the draft horse, short-horn bull and the bull dog tend to confirm observations made upon man. Physical examination of the adrenal type of man would show the following:

Hair: Of head, coarse, often curly; of body, coarse and thick, often giving the "hairy ape" appearance.

Forehead: Low, with usually a low hair line, which gives the characteristic "low brow" expression.

Eye: The iris shows ample pigmentation, either dark blue, brown or black; the pupil is small and reacts instantly.

Nose: Well developed, with large nostrils.

Lips: Full, slightly negroid, ample circulation, which gives them color and keeps them warm.

Teeth: Large (especially the canines), yellowish in color, extremely hard and resistant to caries. The dental arches are full and round.

Tongue and Palate: Low-arched palate; tongue thick, wide and clean; papillae coarse and thick.

Skull: Wide across the temples; lower jaw heavy, solid and often protruding.

Ear: The lobe is always thick and large, often unusually large and long.

Features: Coarse.

Skin: Dry, thick and warm.

Neck: Thick and short; "bull" type.

Chest: Broad, thick, containing large heart and lungs.

Abdomen: Wide, thick, often protuberant.

Genitals: Large.

Extremities: thick and short; fingers and toes stubby; nails short, thick, with moons small or lacking.

Having now a mental picture of the adrenal type, some of the major functions of the adrenal glands can be discussed more in detail.

The nervous energy of the adrenal type is inexhaustible, especially the nervous response of the sympathetic system, the result of perfect oxidation of phosphorus in the nerve tissue. Oxidation of carbon in the muscular system gives the adrenal type his great warmth. The temperature of his body is scarcely ever below 98.8°F., with hands and feet always pleasantly warm. As digestion and detoxication of food poisons depends greatly upon oxidation in the liver and intestines, the adrenal type has thorough digestion—in fact, he may boast that he can eat any and all kinds of foods without discomfort. The exogenous uric acid products, as well as the indoxyl compounds, are completely detoxicated in the liver and do not accumulate in the blood, nor are they found in the urine.

The skeletal muscles are well developed and have splendid tonus. Fatigue is unknown to the adrenal type. Their muscular endurance is spectacular. The perfect tonus of the involuntary muscles is evidenced by the complete and rapid peristalsis, resulting in several perfect bowel evacuations daily. Pregnant adrenal women go through their labors quickly, with strong, steady uterine contractions.

The blood picture is characteristic A slight to marked polycythemia always occurs; leukopenia, never. The blood, which is of a rich-red color, clots quickly, thereby lessening the danger from traumatic hemorrhage. The opsonic index is high, the immunity complete. Adrenal individuals hardly ever become infected, even with venereal diseases. The red cell sedimentation rate is slower than the socalled normal. Often no apparent settling of the corpuscles occurs during the first hour.

The adrenal types have the phlegmatic nervous disposition — easy-going, jolly, happy, always smiling or singing, never bothered with insomnia, fear or "cold feet." They are always the same to their relatives and associates. They have many friends, because they are warm-hearted and surrounded by what is called an aura of kindly sympathy. Their splendid circulation gives them warm, magnetic hands, hence their success as masseurs and magnetic healers. It is lamentable that these fellows have, by the ridiculously high entrance requirements imposed upon medical students, been barred from the healing profession as regular doctors of medicine. As a rule they make the most excellent doctors. Nowadays they are found among the most successful "irregular" practitioners.

The adrenal type of person has a steady, even disposition. Slow to wrath or anger, they will often go out of their way to avoid a quarrel. Their patience and their great muscular strength, together with a rather lower than normal mental acumen, puts the majority of them into the laboring or peasant class.

The Thyroid Gland and Type

During the past thirty years, the thyroid gland has been intensively studied and its more important functions can be tabulated as follows:

1.—It regulates the *rate* of oxidation in all the body tissues.

2.—It regulates the rate of repair of damaged or diseased body tissues.

3.—It regulates the rate of sugar liberation from liver to blood stream.

4.—It regulates the rate of the heart beat.

5.—It regulates the rate of brain (special sense) activity.

6.—It regulates the rate of normal cell growth and reproduction.

Physical examination of the thyroid type of individual would show the following characteristics:

Hair: Of head, fine and silky; of body (except on pubis and in axillae), hardly noticeable, because it is so fine and thinly distributed.

Eye: Large and slightly prominent.

Features: Delicate and finely molded.

Teeth: Of moderate size, pearly white, soft and not resistant to caries. Dental arches usually V-shaped rather than round.

Tongue and *Palate*: Tongue, moderately thin and long, with fine papillae; palate, high, more V-shaped than arched.

Ear: Finely molded, with small, delicate lobe.

Skin: Fine, satin-like texture, slightly moist, resilient and elastic; thin, which gives underlying veins undue prominence.

Neck: Graceful, thin and long.

Chest: Long and thin; heart usually smaller than socalled normal.

Abdomen: Long and usually thin.

Genitals: Of medium size.

Extremities: Finely-molded, graceful hands; beautiful fingers, shapely but neither stubby nor markedly elongated.

The most remarkable characteristic of the thyroid individual is his high-strung and extremely sensitive nervous system. He is the classical "race-horse" type, just as the adrenal person is the "draft-horse" type. Thin, wiry, restless, quick, always on the jump, always listening, watching, smelling, as all the special senses of the thyroid person are highly developed. The heart's action is usually above 72 and the least shock to his nervous system will result in an acceleration of that organ.

Simultaneous with the cardiac acceleration is an increased secretion from the salivary and intestinal glands, liver, kidneys and sweat glands. The liver discharges sugar into the blood stream more rapidly and, if the pancreatic function which maintains the concentration of blood sugar is weak, glycosuria results. Due to an increased metabolic rate, catabolism proceeds faster than anabolism, which results in loss of body weight. The cerebration of the thyroid individual is most interesting. Usually several streams of thought literally whirl through his brain; he finds it most difficult to concentrate; he is forever dissatisfied with his surroundings, home, friends and creations.

In discussing the adrenal gland it was noted that the adrenals determine whether or not the fire (oxidation) shall burn. The thyroid glands says *how fast* the fire shall burn.

Women belonging to the thyroid type, especially when the gland is overstimulated, find their menstrual cycle shortened, sometimes from 28 to 14 days. Their period of gestation is also shortened, from 280 to 260 days or less. As a rule, their babies are small and thin, but usually healthy. The thyroid regulates the flow of breast milk, and it is the thin, wiry type of thyroid mother who has breast milk to spare.

Thyroid persons suffer from insomnia and, when they do sleep, are inclined to dream a great deal. But they awaken early in the morning, fresh and with the day's plans formulated. Their sex sensations are exquisitely developed. Orgasms, accompanied with an intensity of feeling that can hardly be described, are rapidly induced and capable of being frequently repeated.

The growth and repair of all body cells is regulated by the thyroid secretion. The hair and nails of the thyroid person grow rapidly and there is quick repair of wounds or damaged tissue. Surgical incisions heal by first intention. There is an interesting and quite tenable hypothesis which explains the effect of the thyroid secretion upon the growth and healing of body tissues.

The tissue culture experiments of Alexis Carrel and Montrose Burrows, both working independently, proved that, in tissue culture, one element was necessary to keep the cells alive and another to make growth or reproduction possible. The first substance was found to be unstable, resembled what is known as complement in the blood serum and made oxidation (life) possible. This substance Burrows called "ergusia." It is similar to, if not identical with, vitamin A and with the adrenoxidase of Sajous.

The second substance was found to be intracellular and the lymphocytes contained great quantities of it. Carrel obtained his supply of this substance from the juices of embryonic tissue. The substance is similar to, if not identical with, vitamin B and contains a thyroid principle. How the lymphocytes become impregnated with this thyroid principle is of great interest.

A study of the lymphatic circulation shows that the lymphocytes flow toward the upper pole of the body through the thoracic duct, and are discharged into the subclavian vein just before it receives blood from the thyroid veins. This blood, being rich in thyroidin, easily makes it possible for the lymphocytes to become impregnated with the thyroid principle, the presence of which is necessary for growth and reproduction of cells. Slow-motion pictures of tissue cultures show the lymphocytes actively motile; like amebae they move through the masses of tissue cells, and it is only in their active presence that growth occurs. A small exposure of x-rays or radium instantly stops the ameboid

movements and the growth of the tissue cells is halted.

If the lymphocytes carry the growth-promoting factor, it would seem that, during the period of active body growth, from egg to adolescence, a state of actual lymphocytosis should exist. The lymphocytosis during childhood and adolescence is a physiologic fact. During the same period, in order to meet the demand for a large supply of lymphocytes, the body needs a special manufacturing center. This center is the thymus gland. To facilitate matters, this gland pours its venous contents, rich in lymphocytes, into the subclavian vein directly under the thyroid, while some of the thymic veins empty into the thyroid veins themselves. It looks as though nature placed the thymus where it is for the definite purpose of furnishing lymphocytes to carry the thyroid principle.

To absolutely prove these premises by animal or human experimentation is difficult, because the body has many extra lymphatic depots that can be used in an emergency. For instance, when the thyroid is removed, physical types resembling cretins result, providing the anterior pituitary colloid cells do not act vicariously as a thyroid.

Experimental gland feeding has shown that, in cases of delayed union of fractures or of old unhealed operation wounds, where the patient has a normal blood lymphocyte count, good results follow the feeding of thyroid extract. This may mean that the thyroid gland has become exhausted to the point where all the thyroidin produced is used for repair of tissues more vital than the unhealed wound and that the thyroid gland deficit can be brought to normal by thyroid feeding, thereby making it possible to impregnate all of the lymphocytes with the growth-promoting factor.

That the lymphocytes are necessary for the proper healing and rebuilding of tissues would seem indicated by the ever-present small round cell infiltration found in traumatized or diseased areas during the stage of repair. On the other hand, if the thyroid extract is fed to subjects with leukopenia, such as patients suffering from exophthalmic goitre, typhoid fever, influenza, tuberculosis, chronic arthritis and certain psychoses, their distress becomes aggravated and a more rapid loss of weight results. This probably means that the thyroid principle, uncombined with lymphocytes, acts as a foreign poison which causes a serious "toxic" catabolism and upsets the balance of the other endocrines.

The Pituitary Gland and Type

The pituitary gland is divided into three parts. The anterior portion, with a distinctly glandular function, discharges its secretion into the blood stream. This hormone probably:

1.—Determines the size and stature of the body:

2.—Determines the degree of intelligence and higher cortical activity;

3.—In a rather indefinite manner, at present little understood, it controls the sex function.

The middle portion of the pituitary gland contains the intermediary canals, lined with special nerve cells fringed with cilia. The most reasonable hypothesis, to date, is that the middle part of the pituitary gland acts as a special test organ, which detects foreign toxins in the blood stream and starts a defense mechanism into action against them.

The posterior portion of the pituitary gland is rich in highly specialized nerve cells and is really a part of the brain itself. Its cells are rich in hormones which stimulate the sympathetic nervous system and, through this stimulation, cause increase of tone and strength of contraction of unstriped muscles.

Physical examination of the pituitary type of individual would show the following characteristics:

Head: Large; the skull is high and often dome-like; the frontal bone and superior orbital ridges often prominent.

Features: The upper lip is usually longer than normal.

Teeth: Usually large, especially the central inscisors.

Joints: Laxity of all joints; knock knees common; also flat feet.

Extremities: Legs and arms long, which gives the tallness so commonly found in this type of persons. Fingers long and thin, with large moons on the nails.

It is more difficult to discuss the pituitary type of individual because, to date, conclusions are based upon conjectured hypotheses. It is fairly agreed among the profession that oversecretion of the anterior pituitary may cause giants or acrom-

egalics and that lack of the same secretion results in dwarfism.

It is understood how the enlarged anterior pituitary can press against the side walls of the sella turcica, causing various degrees and kinds of headaches, and also how the pressure can be exerted toward the optic chiasm, resulting in diminution of the visual fields and finally total blindness. There is even weighty evidence that a sudden swelling of the anterior pituitary gland, which is restricted by a less-roomy, rickety-deformed sella turcica, can result in epileptic convulsions. But of the true effect of the anterior pituitary on what may be termed "higher brain function," little is known. It is said that the pituitary type is richer in "soul qualities" (intuition, artistic temperment) and that all of the world's great geniuses belonged to that type; also that the sex urge is more strongly developed.

An important point to be remembered is that the hundred-percent normal individual cannot be classified into any of the glandular types above discussed. For example, if the number 100 be taken for the normal value of any gland, then the normal person's pituitary would be 100, as well as his thyroid and his adrenals. His glandular equation would be NORMAL P100 T100 A100.

The pituitary type would always be deficient in either thyroid or adrenals and would have an equation such as: P100 T50 A100, or P100 T100 A50. The first equation would represent the balance of the lazy, impractical dreamer; while the second would designate the class commonly known as the genius. Because of the genius's subnormal adrenals, it is necessary for him to be constantly stimulating them, which he does by excessive use of food stimulants such as meat, coffee, tea and salt, or he even resorts to alcoholics or finally drugs. When he has succeeded in lashing his adrenals to one hundred percent activity his pituitary and thyroid would become overstimulated and his equation would read as follows: P150 T150 A100. In this state he would have the most intense desire to work—to create perfect art—and the result would be a world's masterpiece, be it symphony, poem, sculpture or literature. Following the period of overstimulation would come the inevitable depression, during which time he would be unable to create or compose anything at all, and might even commit suicide. If the periods of depression would not occur and the flame of artistic creation keep blazing, sooner or later the adrenals would wear out and an early death halt the noble creations of a Schubert or a Chopin.

A knowledge of gland characteristics gives, not only an interesting method for classifying types of patients, but also helps the doctor to understand psychic behavior and temperament, to break down difficult mental barriers and to fathom, as S. Wier Mitchell used to say, the very soul of the patient. The more complete the understanding between doctor and patient, the greater the possibility for perfect cooperation, upon which depends the greatest chance for a cure.

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The Art of Medicine

No rules can be made concerning the treatment of a disease, because no two people react in the same way to the same disease. Every case needs to be judged upon its own merits, and it is clinical experience only which enables the observer to use the right drug and the right dose in each particular case. This fact alone should suffice to protect us from the bureaucratizing of Medicine.—Dr. J. E. R. McDonagh, *London, Eng.*

The Low-Salt Diet

By Dr. R. von den Velden, Berlin, Germany

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THE tendency prevailing in the pre-scientific era of therapy, to change the tone of the sick human organism or the organism liable to become diseased, is recently experiencing a renaissance. In accordance with the ever-increasing knowledge, during the past half-century, of normal and pathologic physiology, our even-recently somewhat hazy ideas of the "tone in tissues" (*Stimmung im Gewebe*—Hering) and the possibility of a change of tone have more and more been placed on a scientific basis.

It lies in the nature of the medical work at the sickbed, that therapeutic measures cannot always be classically and logically built up from the basis of experimental and clinical investigation, but rather frequently start empirically, without any complete critical development; not infrequently there is a useful nucleus, but it is sometimes greatly distorted because it lacks scientific reasoning and critical application. Sometimes it takes more work to direct such wrong ideas back to the right path than it took to introduce them as a predominant treatment, not only into practical medicine, but also into the belief of the suffering human beings, thus, for example, we have recently experienced an overestimation of certain forms of diets. The reaction that had been predicated by all those familiar with metabolism has not failed to come, although we must admit that those enthusiasts who have retained some power of criticism have gained in their theoretical and practical therapeutic knowledge of this field.

One of the questions raised by the new school of thought on diet is, whether sodium chloride is of any therapeutic significance, and especially whether and under what conditions a diet of low salt content is indicated as a therapeutic measure. Some general remarks on the importance of salt for the animal organism may be in order.

Sodium Chloride

The need for including salt in the diet has always varied with the different peoples and races. H. Strauss reports that tribes of Bedouins and nomad tribes in Russia and Siberia live with a minimum of salt, because the geophysic conditions of their surroundings force them to a certain limitation in this direction. In central Africa, even now, some tribes are reported to be most pleased by a gift of salt. Unfortunately, according to my information, no detailed investigations have been made on the salt content of the organism, and especially the blood of such tribes as are forced to get along with little salt, and on their reaction to a suddenly increased amount of salt in their diet.

The amount of salt consumed daily with their normal diet by the civilized people of the various continents varies between 3 and 25 grams. This depends, not only on the stimulation of salt to the palate (especially with smokers and drinkers), but also on the condition of the tissues of the stomach; both causes may lead to temporary or permanently increased higher quantities of salt in the diet. It is difficult to determine how much depends on the emotional components of the appetite in the individual case. The socalled "hunger of the tissues" cannot be easily referred to the need of the individual for salt. It is certain that, for example, during the starvation period of the World War, the hydrophilia of the tissues, caused by a liquid diet of low caloric value, increased the hunger of the tissues for mineral salts, especially NaCl, and resulted in a greatly increased use of salt.

It has been determined beyond doubt, that a healthy man can be kept well for a long period on about 3 grams of NaCl a day. This, of course, is a severe form of low-salt diet. Abderhalden thinks that an adult person needs 4 to 5 grams of sodium chloride a day. H. Strauss, on the basis of his large clinical experience, considers a low-salt diet, of several months' duration, feasible when only 1 to 2 grams are lost in the urine per day. Even this extreme reduction of sodium chloride did not have any bad consequences. Of course, individual reactions will vary. The fact that, under normal conditions, such a low content of salt in the diet was still acceptable,

does, of course, not establish its therapeutic significance, nor its absolute harmlessness.

Von Noorden has only recently found out how dangerous onesided dietetic measures can be, even for the healthy organism, but especially for the diseased organism, if applied for some time. A change of the provision of mineral salts, especially of sodium chloride, in the daily diet can exert a great influence, not only on the mineral metabolism, but on the intermediary metabolism as well, generally on the efficiency of all cells, although, of course, to a varying degree in the individual organs.

Straub gives a good review of the status of this question in his paper, "Connection with and Influence of Salts on the Condition of the Colloids of the Body" (*Ueber Zusammenhang und Einfluss des Salzes auf den Zustand der Kolloide im Körper —Deutscher Kongress für innere Medizin. 1924*). Our investigation today, in his opinion, should not be directed towards the study of osmotic pressure, but rather on the effects of the ions on the electrical charge of the colloids, and the connected phenomena of swelling, loosening, separation and other transitory changes; also of the acid-base balance. What we know about the ways of elimination of the various salts, their distribution in the organism, the minimum needs, the maximum of elimination, the reserve supplies in the depots, etc., is of great importance in clinical problems, in his opinion. We also have gained information regarding the various balance conditions of tissues and liquids in the regulatory mechanism that controls the acid-base balance, on the buffering in the tissues, on the cooperation between various mechanisms of the central nervous system and on the presence of acid.

This places our practical measures of treatment, especially in regard to the mineral metabolism, under severe critical observation. We know that the mineral content of the blood in herbivora is less well preserved than that of carnivora and omnivora; we know that the seasons, emotional excitements, muscle work and, of course, sicknesses, influence the mineral content, partly by way of the central nervous system.

The increase of certain neutral salts can increase the acid content of the body; for example, the feeding of calcium chloride results in elimination of the calcium and increase of the hydrochloric acid of the stomach. Normally, the organism, by means of its regulatory mechanisms, especially the function of the kidneys, can balance the variations of the acid-base balance that depend on the mineral content of the food. Disturbances, in case of diseases of the kidneys, of pneumonia, etc., also in the case of defective central regulation, result in definite symptoms and aspects of diseases.

This short discussion shows clearly that the reaction of blood and tissues in the human being can be influenced only temporarily, but not permanently. The body has sufficient regulatory mechanisms to fight against the constant disturbances of the balance resulting even with the normal diet. The beneficial action ascribed to a certain definite diet—a "onesided" diet—probably is largely due to the change in the amount of mineral salts it supplies. A change of diet, without addition of neutral or alkalinizing salts, can cause a change in the metabolism only slowly and to a limited degree.

Special Diets

With an absolute raw-food diet, only 2 grams of sodium chloride (against 12 to 15 grams with a mixed diet) are given, with a low water content, hence the result is an immediate and severe loss of weight, which is caused almost exclusively by the loss of water and the simultaneous loss of sodium chloride. After the first loss of NaCl, the body begins, after a few days, to retain it strongly, and the daily elimination in the urine can go down to less than 1 gram. When a normal diet is resumed, the loss of weight is made good in 1 to 2 days, probably due to the increased retention of water through the increased content of NaCl in the diet. Hence a raw-food diet is a therapeutic diet.

The withdrawal of sodium chloride from the diet in the treatment of kidney diseases was first systematically taken up by H. Strauss, in 1903. Since this time the limitation of the amount of sodium chloride, especially with diets of all descriptions, has gradually increased. The indication for such a treatment is a disturbance of the balance between intake and outgo; tests have to be made for a period of several days.

In the first place are all those cases in which there is a tendency of the tissues

to hoard the circulating sodium chloride. This may become dangerous because, with the sodium chloride, other salts, and especially water, are also retained, which may eventually go so far as to become a noticeable edemisation. Of course, connected with this is a possible disturbance of the intermediary metabolism in various directions.

There are various causes for such a hoarding of sodium chloride, for instance, disturbances in the inner secretory balance —syndromes with capillary toxic effects, as in the case of certain diseases in the kidney and of disturbances of the circulation—with or without renal complications, but most of all in certain infections, particularly of the type of pneumonia.

The research work of the last thirty, and particularly of the last five years, has given us plenty of evidence as to what extent the retention of sodium chloride in the tissues, and the resultant absolute and relative retention of other salts and water, and especially a change of the acid-base balance, influence the ability of the tissues in general to function; also to what extent the tendency to healing (for example, the cicatrization of open wounds) and the defense reaction to acute and chronic inflammations, especially of tuberculous type, can be influenced in pathologic tissues.

In contrast to this group of primary (or secondary) histogenic disturbances of the sodium chloride metabolism, the disturbance of balance due to the faulty elimination often connected with kidney diseases, has been too much emphasized, especially with regard to a diet of low salt content.

There is no standardized low-salt diet that fits every condition, nor is there a scheme for such a treatment of certain diseases that are caused by disturbances of the intermediary metabolism and certain vegetative functions. Much abuse has been made of low-salt diet, in cases of tuberculosis, nervous disorders, cardiac troubles, etc. To propose the same low-salt diet for general use, as is often done by quacks and even by advertisements in daily newspapers, should be strongly resented. Every case must be examined with great care and the diet adapted according to individual salt tolerance. The change of reaction in the tissues to inflammatory stimulation must be treated as an experiment, by using a very subtle form of diet, and must be carefully observed for a long period of time. Of course, the influence of various other factors in food must be considered.

These points are sufficient to demonstrate the difficulties of such a diet in which the content of minerals, particularly NaCl is to be adjusted. It is, therefore, easily to be understood, why so many quacks and even physicians have to report about the ill successes of such treatments. Aside from definite nephropathic conditions, the observant physician will find numerous other indications for reducing the salt supply, and such cases may frequently show constant or periodic salt deficiency in the body.

We have already heard how a raw-food diet, and to a lesser degree a milk diet, may result in elimination of salt; but only for a short period of time. The organism soon adjusts itself and retains the salt. Although it is possible, by means of sodium chloride substitutes, of which Hosal has been found especially effective, to make such a diet more palatable, this treatment is not sufficient for all indications. It may even be necessary to support the treatment with therapeutic measures. This can be done by administering diuretics such as Diuretin, Theocin, or better, Salyrgan and Novasurol. But those measures show only a temporary effect.

Hosal and Bromhosal

It has been shown that the use of an alkali bromide will decidedly increase the elimination of NaCl in the urine. As long as forty years ago, attempts had been made to identify the sedative effect of bromine and the removal of chlorine ions connected with it, since it is a question of "dechlorination" and not "bromination" which is concerned in therapeutic results. Only when this is accomplished is it possible to obtain a really extensive elimination of NaCl from the tissues when we periodically add a small amount of potassium bromide to the low-salt diet.

Although it was real progress in the technic of the low-salt diet, to make this flat-tasting food (which was generally extended over a long period) more palatable, by substituting other preparations for NaCl, unfortunately this was done only very seldom.

The introduction and use of Hosal in the diet was of great importance. Hosal

is free of halogen and contains 11.7 percent of calcium and 15.3 percent of sodium, besides traces of magnesium and phosphoric acid. In the body it is completely decomposed, hence it does not irritate any of the organs of elimination, and also has no irritative effect whatsoever on the intermediary metabolism and the vegetative nervous system. It gives the food a pleasant taste, and thus makes the low-salt diet acceptable.

In view of investigations relative to the reaction of bromine on the sodium chloride metabolism, I have made use of Hosal for bromide therapy. After a number of long experiments, for which various preparations had been made through the courtesy of the *Chemisch pharmazeutische Aktiengesellschaft Bad Homburg*, I started finally to use Bromhosal.

Bromhosal is a 60-percent bromine preparation on the basis of Hosal, composed of Ca-Na double salts of poly-amino-acids on the one side, and low fatty acids on the other, through which the unpleasant taste of bromide salts is eliminated. Simultaneously, the effect of the bromide is intensified by the combination of double salts of alkaline bromide and amino-acids. Through introducing calcium and potassium, the sodium content was kept relatively low.

Observations extending over a period of two years, as well as more recent investigations, have shown that a rational bromine therapy, entirely within the demands of modern science, can be carried out by means of Bromhosal which, used either as medication or as a dietary supplement, may be added to food already cooked or used in the kitchen, in doses of from 3 to 5 grams. It can, safely and without hesitation, be entrusted to the patient himself. It tastes good and is generally liked. It must, of course, be used according to a definite schedule, which will subsequently be referred to.

Concerning experiments, I will briefly mention that a dose of 3 grams of Bromhosal, added daily to a diet low in salt content, produces, in the first 24 hours, a decided increase in salt elimination. In prescribing Bromhosal in cases of normal and not over-salted diets, a definite increase in the salt elimination in the urine will also be noticed. The bromine is thereby retained in the body; but when administered in the form of Bromhosal, in small and fairly frequent doses, this bromine retention has never occasioned disturbances that could be either subjectively or objectively determined. Investigations conducted along the process of elimination, only briefly indicated here, have served to ascertain what we already know from experience to be true; namely, that it is possible, in using the diet salt in the form of medication, to mobilize the sodium chloride and eliminate it from the human organism, even in cases where low-salt diet and other measures fail. Inasmuch as Bromhosal has already established itself in the realm of bromide therapy, I shall merely touch upon this subject, in view of its relation to use in salt-free diet.

In the first instance are the numerous conditions where symptoms, both mental and physical, of nervous excitability must definitely be curbed. The most varied and curious manifestations thereof can be seen at the sickbed, in various forms and localizations in the organs which are connected with the vegetative nervous system.

Second are the disturbances of the genitourinary and the gastrointestinal tract and heart symptoms, objective or subjective, in particular those causing disturbances of the peripheral circulation. These all belong in the great reservoir of the equilibrium disturbances of the vegetative system, whether they have their origin in the vegetative nervous system, the endocrine glands or in the tissues. The sedative treatment of these appears to be more important than the building up of the general tone, without in the least trying to minimize the importance of tonics and physical therapy. The subsiding of intense nervous irritability, with its attendant secondary symptoms, is a result which, naturally, cannot be looked for in less than two or three days' time.

The uninterrupted use of Bromhosal over a period of several weeks is not recommended. The periodic use of increasingly larger doses has been proved to be the practical and accepted method. As a general rule, 3 to 5 grams of Bromhosal are used, in connection with a light diet, meat being substantially restricted, over a period from eight to ten days. The following eight days, the use of drug is stopped, after which the same period of medication is resumed.

In case of vasomotor disturbances of

moderate severity — heart disturbances, mild insomnia and general nervous excitability, particularly when associated with the climacteric, etc. — we have obtained gratifying results.

As the absorption of bromide varies considerably in the individual, the use of 5 grams of Bromhosal, which is equivalent to 3 grams of bromine, should bring about definite results within a six-day period, the personal idiosyncrasies being taken into consideration as a matter of course. We have yet to see symptoms of bromism, either in private or hospital practice. The use of 5 to 20 grams of NaCl, administered during a period from 12 to 25 hours, should, in the event of such a condition, prove adequate in controlling it.

These suggestions are sufficient to illustrate the indications and field for this bromine therapy. Practical experiences have demonstrated that Bromhosal may be safely used in bromine therapy when specifically indicated, in contrast to Hosal, which, in the stricter sense of the word, can not be classified as medication.

It is possible, in cases indicating the specific necessity for bromine treatment, that the low salt content is of definite value in bringing about therapeutic results. From the clinical standpoint, it appears right to point out the special indication for bromine therapy in cases where chlorine elimination rather than bromine action, is wanted. In such cases, Bromhosal, used as a substitute for salt, is not only well liked and well tolerated over a much longer period of time, but it is often used with pleasure. The diminishing of thirst, a definitely quieting effect on the nervous system and a rapid elimination of salt in the urine were observed.

That Hosal is of definite service in certain nephritic cases, has been proved in the clinics of Brauer and Volhardt. It is understood that bromide used in these conditions as an adjunct to diet has proved valuable.

Especially desirable was the use of this medicinal diet therapy in **diabetes insipidus.** While the results are only temporary, they are, nevertheless, astounding. The patients must be nourished in a special way; i.e., a meat- and salt-free diet, according to the degree of their illnesses and disturbances. The alternating of injections of pituitary extract and this substitution of Bromhosal for salt in the diet, has proved very successful.

Finally, in connection with the salt-poor diet, a few words may be said about its application in organic and functional disturbances in the peripheral circulation. This includes the arteriosclerotic disturbances and the hypertonic syndromes. According to our experiences, it is useless to discuss here whether the specific results of bromide, the dechlorination, the variation in water retention, the related questions of permeability and swelling and the restriction of diet, etc., are most decisive. It remains the clinical fact that results have been achieved in hypertonics of various kinds, as well as in arteriosclerosis. In any case, bromine therapy has been too long neglected in this field. Whoever will apply it, with pharmacologic understanding and clinical experience, will frequently experience good results.

Finally, I wish to call attention to the importance of the low-salt diet and its influence on chronic infections. The diets suggested by Gerson, Hermannsdorfer and Sauerbruch, which have already undergone many changes, cannot be considered as salt-free, nor even low-salt diets. In the event that such a diet is desired, it is better to eliminate meat and use a diet of vegetables and carbohydrates, seasoned with Bromhosal. This is entirely successful, as demonstrated by Hermannsdorfer, and brings about the desired decrease in salt. It is desirable to alternate with periods of a few days of slightly-salted diet. Von Noorden and Königs have already stressed the importance of such periodic treatment as being desirable.

In conclusion, let me stress that, by variation of the salt content in the diet, and especially by using an active transmineralizing medicinal diet, changes can be achieved which will be very helpful and may be regarded as a basis for other therapeutic measures, medicinal or physical.

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Technic for the Introduction of Radiopaque Oils

By D. L. Tabern, Ph.D., Lake Bluff, Ill.

So commonplace has the use of radiopaque oils become, that it is difficult to believe that this technic originated but a decade ago in the work of Sicard and Forestier. The rapid advance has been due, in part, to the excellent radiopaque media developed by the research chemists; in part to the elaboration of simpler and more satisfactory modes of administration; but more particularily to the fact that the use of these oils enables the rapid determination of data which could not be secured in any other way. For instance, while the expert roentgenologist may secure approximate information regarding the location and condition of certain nasal sinuses from a plain film, it is only through the use of radiopaque fillings that he can observe the fine, but none the less important, details of overlapping, of wall thickening and of drainage time.

The accompanying photograph illustrates some of the more important instruments which are now in use for the introduction of the radiopaque oils; their applications will become apparent in the succeeding discussion.

Filling of the Nasal Sinuses

The frontal sinuses may be filled directly by inserting a cannula and forcing in from 1 to 5 cc. of the radiopaque oil with a syringe. Injection of the maxillary sinus can be accomplished following puncture through the inferior meatus, and the sphenoid sinus can also be filled following puncture.

Much simpler and even more satisfactory are the displacement methods recently described by Proetz[1], by Fraser[2] and by Todd[14]. In the Proetz technic the patient is placed flat on his back upon a table, with his head projecting over the edge, and tilted back until the chin and the ears lie in a vertical plane. In this position the nasal cavity forms a reservoir, with the sinuses opening off like rooms from a hall.

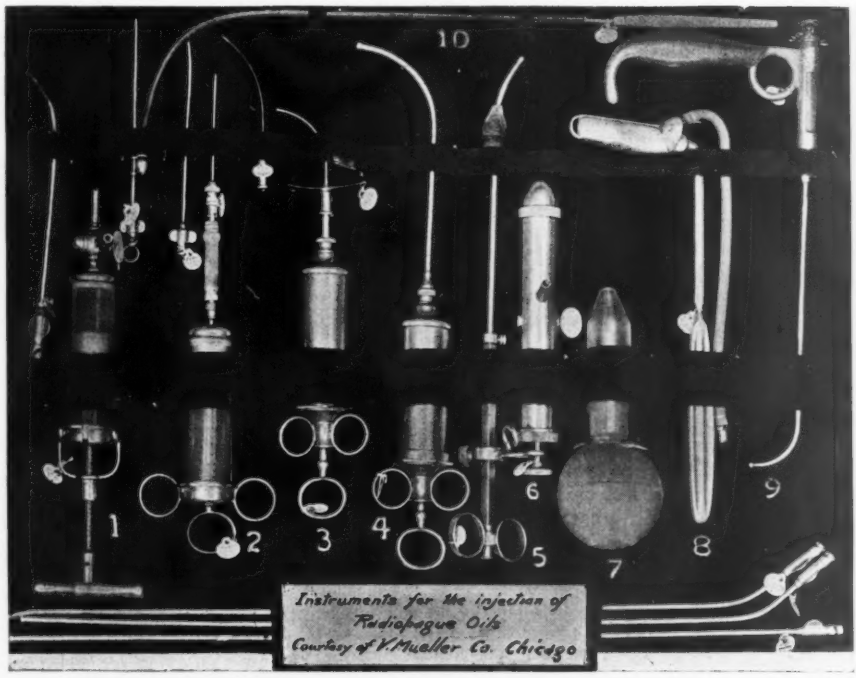
Two (2) cc. of the radiopaque oil are placed into each nostril, preferably from the apparatus numbered 6 in the illustration, flooding the floor of the nasal cavity; since the openings into the sinuses are relatively small, little if any oil enters them. With one nostril closed, a small suction is applied (preferably by a suitable pump, although the simple syringe, No. 1, can be utilized), through the side-arm of No. 6, to the other nostril, drawing a small bubble of air out of each patent sinus. Upon release of the vacuum (by removal of the finger from a special hole in No. 6, oil flows back into the sinus. This cycle is rapidly repeated, with the patient saying "K" to close the choana at the proper time and with an interruption to add more oil if necessary, until the desired filling is secured. The operation need require but one or two minutes and is entirely painless.

Two facts are to be noted: (1) Normally, filling is not complete; (2) no sinus will fill higher than the level of its ostium. This partial filling is really an advantage, because it permits the determination of liquid levels and thus the differentiation of partially overlapping sinuses. By proper rotation of the patient, the contour of any desired portion of the wall may be studied.

Proetz believes that, since even a nearly non-functioning sinus may be filled, study of filling alone is insufficient; the rate of drainage is perhaps even more important. In other words, it is the sinus which does not readily expel the waste products of the local infection that is in need of intensive treatment. He has found that a fairly normal sinus will retain but half the instilled oil after 24 hours, and practically none after 72 hours.

It should be pointed out that, for the technic described, an oil of low viscosity (that is, a very fluid one) is essential. Such a product Proetz has found in **Brominol Light,** which has the added advantage of slightly lower radiopacity, giving shadows better suited for diagnosis. Furthermore, the low viscosity allows the study of drainage times according to the schedule suggested, rather than over a much longer period.

All films are made with the patient sitting. The first is a straight posterior-anterior, with the face against the film;



the second a lateral; and the third a mento-occipital position, with the patient's head bent sharply backward and the central ray entering just below the chin, at right angles to the film.

The technic of Fraser is somewhat similar in principle and has the advantage, in certain cases, of giving unilateral filling. With the apparatus (not illustrated) lying on a table, the patient assumes a prone-plus-30° position, with two "acorns" of the system in his nares. To one side of the system is attached a manometer and through the other is injected 10 cc. of a diluted iodized or a brominized oil. The patient alternately makes chest pressure and suction in four-second periods, allowing four breaths of normal respiration to follow each effort, while a further 5 to 10 cc. of oil is slowly injected. Films are taken at once in the following positions; (1) lateral-lateral; (2) erect-lateral; (3) lateral-Waters; (4) contralateral-Waters.

The Respiratory Tract

Many methods have been proposed for introducing radiopaque oils into the bronchi:

1.—*Transglottic*: Following complete anesthetization of the pharynx and larynx, a laryngeal cannula is introduced into the larynx. Through this the oil is injected into the trachea.

Very recently, Franklin and Orley[3] have proposed passing a flexible catheter along the floor of the nose, through the larynx into the trachea. By this method, profound local anesthesia is unnecessary.

2.—Somewhat similar is the *supraglottic method*, so clearly described by Pritchard, Whyte & Gordon[4]. Here the cannula (No. 4) does not enter the larynx, the warmed oil being allowed to flow through the open glottis into the trachea.

The pharynx and larynx are first thoroughly sprayed with Butyn or cocaine, and, in addition, 2 cc. of the solution may be injected into the trachea to relax the glottis. When anesthetization is satisfactory, the tongue is drawn forward, opening the glottis and closing the esophagus while the patient breathes through the mouth. About 20 cc. of warmed oil is slowly injected against the under surface of the epiglottis. By suitably arranging the position of the patient, the oil may be caused to flow into any desired portion of the lungs.

3.—*Subglottic* or *Transcricothyroid*: This consists of inserting a needle (No. 3) through the cricothyroid membrane into-

the larynx, through which the oil is introduced into the trachea. If a lower lobe is to be visualized, the oil is injected with the patient in a sitting position and inclined toward the side being studied. If an upper lobe is under examination, the patient is placed in the recumbent position and the head lowered after the instillation. With modern technic and the use of a small (20-gage) needle, anesthetization of the region is frequently unnecessary.

Care must be taken to make sure that the trachea has been entered. This is best done by repeated aspiration of air through the syringe. Also, in making the injections, it is essential to see that the peritracheal tissues are not infiltrated with the oil.

A 20-cc. syringe is filled with warmed oil (35° to 40°C.) and part of this is injected slowly. The instrument is withdrawn and radiographs are taken immediately, as reflex cough may cause most of the oil to be expectorated. The operation, while requiring skill, is highly recommended, especially for children, where cooperation is not easily secured.

4.—*Intratracheal*: In this method, the oil is introduced into the trachea by means of a catheter. In Iglauer's[5] modification (No. 8), the tube is provided with two barrels, one for the introduction of the oil, the second for breathing.

5.—*Aspiration Method*: In the aspiration method advocated by Singer[6], the tongue is pulled out as far as possible and held by the operator. The oil is introduced through a straight cannula attached to a 20-cc. syringe. The position of the patient determines the flow of the oil and therefore the portion of the lung visualized.

6.—Ochsner[7] describes an ingenious technic which he terms the *passive method*.

After thorough cleaning of the mouth, the anterior tonsillar pillars are swabbed with cocaine solution. When the swallowing reflex has been abolished, a small amount of procaine solution is aspirated into the lung, to act as an anesthetic. After a second anesthetization of the anterior pillars, the patient is instructed to take 10 cc. of the oil into his mouth and aspirate it into the bronchial tree by tipping the head backward, protruding the tongue, and breathing. A second 10 cc. of oil is taken in the same way.

7.—*Bronchoscopic Method*: Jackson[8] and Ballon[9] have pointed out that the bronchoscopic method is, not only very convenient for introducing halogenated oils into the lungs, but makes possible the removal of uncontaminated cultures and the aspiration of pus from "drowned" areas. After thorough preliminary anesthetization, the patient is placed upon the table in the dorsal position. The warmed bronchoscope is gently passed into the trachea. The local anesthetic is then sprayed into the trachea and bronchi, to obtund the cough.

After examination, the oil is injected, with any suitable syringe, through the bronchoscope into the different bronchi under direct vision, the assistant slowly turning the piston of the special syringe. As soon as the injection is completed, the bronchoscope is withdrawn and a series of roentgenograms taken in various positions.

Whenever possible, the introduction of the oil should be followed fluoroscopically and roentgenographs made before coughing has had an opportunity to cause dispersion of the opaque medium. While brominized oils are much less harmful in the stomach than the older iodized substances, it is desirable that any oil accidentally swallowed be removed by appropriate means.

In distinction from sinus work, in bronchial visualization the oil should merely coat the walls of the bronchi; complete filling evokes a strong cough reflex and indirectly interferes with inspiration. For this reason, an oil of relatively high viscosity is required. Both brominized and iodized oils are in use; the latter have the possible advantage of higher radiopacity, but recently published pharmacologic studies indicate that the brominized oils are safer, particularly in suspected tuberculosis and in patients hypersensitive to iodine.

The Uterus and Fallopian Tubes

For the visualization of the female pelvic organs, the radiopaque oils may be used either as a supplement to or independently of the Rubin test. The oil method possesses the outstanding advantages of showing the exact shape and position of the pelvic organs and of localizing the tubal block if present.

The technic is simple[10]. The patient is placed on a horizontal fluoroscopic table, a bivalve speculum is inserted, the cervix swabbed with an efficient antiseptic and the upper lip grasped with the tenaculum.

The cannula (No. 5), with syringe attached, is then inserted into the cervical canal and moderate pressure is made, to prevent the escape of oil. The fluoroscopic screen is then brought into position and from 4 to 8 cc. of oil injected. As soon as the uterus is filled to capacity, and the tubes partially, the injection is stopped and successive radiographs taken several minutes apart. If the tubes are patent, either these views or others, made a day or two later, will show the tubes filled and a "spill" of the medium in the pelvic cavity.

Rubin[11] and others have strongly advocated the manometric measurement of the pressure employed for injection. This should not exceed 30 cm. Stein and Arens[12] have demonstrated the advantages of combining pneumoperitoneum with the oil injection.

It has been repeatedly noted that pregnancy frequently follows oil injection, probably due to the clearing out of occluded or partially blocked tubes. Since the cleansing action should be more marked with an oil of low viscosity, the opinion seems to be gaining ground, particularly abroad, that oils of low viscosity, such as Brominol Light, have many advantages in this type of work. Mathieu[13] has also pointed out that a low-viscosity oil requires less pressure for injection and hence causes less pain to the patient.

Radiopaque oils have frequently been employed in many other connections: for outlining empyemal cavities, the seminal vesicles and the urinary tract; for locating tumors of the spinal canal; etc. These technics are, however, outside the scope of this review.

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Who Decides on Insanity

In spite of all claims to the contrary, our legal system leaves to twelve laymen the final diagnosis of the sanity or insanity of the person on trial. The law says frankly it would never try a case of insanity before twelve doctors, as their particular preoccupation would warp their judgment. This is just as frankly stated in numerous books. To the legal mind, a knowledge of a subject is dangerous and ignorance safe. Two housemaids, two motormen, four plumbers, one auto salesman, a violinist, a sewer cleaner and a lineman are better judges of insanity than any twelve physicians. Of course the judge and the counsel and the twelve jurors, if a daughter began to rave, would call in twelve short-order cooks to diagnose the case, and the treatment would be carried out by a dozen auto-mechanics—of course!

Some psychiatrists refuse to appear in court, because they feel that legal procedure makes a scientific opinion impossible. But if the ethical psychiatrist refuses to serve the court, the unethical will take the stand just the same. No arrangement could better serve the purposes of the unethical lawyer.—Dr. C. E. Kiely, *of Cincinnati, in* Ohio St. M. J., *Nov.*, 1931.

Science and Psychic Phenomena

By George B. Lake, M.D., Chicago

A MAN—a keen, intelligent fellow—said to me the other day, "Do you believe in psychic phenomena?"

I was astonished, for I knew him to be a man who had read widely and who had, at least, a reasonably open mind, so I retorted by asking, "Do *you* believe in chemistry?"

"How foolish! One doesn't have to *believe* in chemistry. It is a well recognized science, capable of being studied and practiced by anyone. One *knows* about chemistry."

"Do *you* know? Have *you* studied and practiced it? Have you ever performed an experiment in a chemical laboratory?"

"Of course not! I'm a lawyer and I never cared for the sciences anyway. But hundreds of men have done so and there are plenty of books on the subject."

"Have you read any of the books or talked seriously with any trained chemist?"

"Why, no. I never did. Aside from my professional reading, my interests have been in the line of history and biography. I believe I never knew an active chemist personally."

"Then what do you *know* about chemistry? Aren't you accepting it, rather completely, as a matter of belief?"

"You're right. Is there really as much basis for a man of average intelligence to *know* about psychic phenomena as there is for me to know about chemistry, if I chose to make use of the opportunities at my disposal?"

"There is," I replied. And since he was sincerely interested, here are some of the things I put before him in several conversations which followed our first one on the subject.

Definitions

It is well, in entering upon the discussion of a subject regarding which opinions may differ widely, to clear the ground by a few straightforward definitions, so that there may be no ambiguity about the words used.

Science, then, is not a thing, but a state of mind which permits a man coolly and impartially, without heat or emotional bias of any kind, to observe and record his perceptions of the facts regarding things and happenings; to correlate these observations until he can work out an hypothesis to explain their relationships; to set up, artificially, a set of circumstances in which his hypothesis can operate, and observe whether or not the results correspond with his deductions; and, finally, to formulate a law which can be applied to all specific instances falling under the general principle in question.

The meaning of psychic phenomena, as applied in this discussion, excludes rather definitely all of the matters ordinarily embraced under the general head of normal and pathologic psychology (though there are inescapable points of contact and similarity) and is confined to those occurrences which are outside of the usual experience of people in general and have to do with the existence of consciousness and self-consciousness, operating apart from physical bodies, and with the manifestations of natural laws which have not yet been discovered and classified by the orthodox scientists.

A century ago, the telephone, the telegraph, the electric light and scores of other things, which are so much a part of our daily lives that we never give them a thought, to say nothing of the x-rays, motion pictures and the radio, would have fallen into this category, for the laws governing these activities were unknown, even to the most advanced scientists of that time, and any man who had known and been able to apply these laws would have been considered a magician and a trafficker with evil spirits. Even the men who actually discovered these things and set about demonstrating them were considered, by their contemporaries, as crack-brained fools. Only when a mass of corroborating evidence had been collected, by independent investigators, were these things considered respectable and worthy of serious discussion by people of sound mind.

Physics, chemistry, astronomy and a number of other fields of knowledge are now embraced within the fold of the sciences, because a number of men, working with special apparatus and especially trained faculties and without collusion, reported substantially similar observations and, applying each other's hypotheses,

were able to demonstrate that, under similar circumstances, similar results were obtainable by anyone who had the knowledge, skill and powers of perception to duplicate the conditions and observe the results with accuracy. All of these avenues of verification are open to anyone who sincerely desires to investigate occult science.

Classification of Phenomena

Physical psychic phenomena (metapsychics), for the purposes of this discussion, may be considered to embrace the supernormal (not super-*natural*, please note, for no activity or phenomenon in the universe can fall outside of known or presently unknown natural laws) faculties, classified by the French scientist Richet, under the three heads: *Cryptesthesia*—the faculty of cognition differing from the normal sensory faculties; *telekinesis*—mechanical action exercised at a distance, without physical contact with persons or objects and according to laws of force which are not now generally known or measurable; and *ectoplasm* — the socalled materializations, by means of which various objects, capable of being photographed, seem to emerge from the human body and assume the appearance of material realities.

Under the head of cryptesthesia fall those faculties known as clairvoyance and clairaudience (the visual or auditory perception of scenes or sounds beyond the range of the ordinary sense organs); telepathy; psychometry; the time sense, the sense of direction and tone sense; intuitional perception; and suchlike.

Telekinesis embraces most of the physical phenomena (apart from materializations) exhibited at spiritistic seances, such as the movement of various objects within the room or to or from more or less distant places, and socalled levitation.

Ectoplasm is the substance frequently seen and less often photographed, projecting from a medium or other person and sometimes assuming the form of veils, clothing or the faces, hands and sometimes the entire form of human beings.

Objections Answered

Let us admit, at once and without argument, that there are many self-styled mediums who operate in a wholly fraudulent manner and for revenue only, the same as there are quacks and charlatans in many other lines of activity, and that eighty or eighty-five percent of the alleged phenomena offered to the public consist of pure trickery.

Let us further admit that another ten percent of such phenomena are the result of self-deception on the part of the medium or the sitters or both.

There still remains a considerable mass of genuinely scientific evidence which can be wholly rejected only by those who have made no effort whatever to investigate it and whose minds are hermetically sealed against new ideas.

The negative testimony of several prestidigators, to the effect that they could duplicate many of the appearances of psychic phenomena, by means of their special skills and apparatus, is wholly without value or meaning. In the first place, approximately ninety percent of the mediums are simple-minded persons, without the manual and mental dexterity necessary for such efforts; and in the second place, the fact that the chemist is able to make, in his laboratory by artificial means, such substances as epinephrin and methyl salicylate, does not prove that the suprarenal glands do not secrete adrenalin or the wintergreen plant develop its essential oil in a purely natural manner.

Moreover, all true scientists recognize that one definitely proved positive finding at once destroys all conclusions based upon a thousand negative findings of contrary import.

Another point which must be borne in mind is that the meaningless dabblings of amateurs in occult studies must not be confused with genuine psychic research, any more than we would consider the opinions of one who had looked at half a dozen stained blood films under a microscope as emanating from a researcher in biology.

The objection is frequently raised that many of the matters reported in the journals of psychic research and in certain volumes on this subject are utterly trivial and have no practical meaning. The same thing is true of any reports of researches in new fields. We must begin with simple observations of facts and phenomena and accumulate masses of these until we have sufficient to form a basis for rational conclusions. The twitching of the frog's leg, which Galvani observed in the frying pan, seems utterly trivial, in comparison with the modern structure of electrical science;

but it proved to be a very important observation.

The fact that many psychic phenomena appear to be producible only in complete or relative darkness leads many thoughtless persons to assume that the absence of light is insisted upon solely and always as a cloak for trickery. It would be as reasonable to insist that a photographer give an exhibition of his art on a street corner, at noon, and to declare that the fact that he must retire to a darkened room, in order to carry out certain steps of his procedure, is an evidence of fraud on his part.

History shows that, in the case of physical facts now fully verified, the men who first propounded them were subjected to obloquy and persecution, and two or three generations or more were required before they were generally accepted. Copernicus published his "Treatise" in 1540 A.D.; Galileo took up the study in 1613; but it was not until half a century after the appearance of Newton's "Principles," in 1686, that the whole scientific world embodied these ideas in its thought. Darwin published his "Origin of Species" in 1859; but seventy years later a "monkey trial" proved that his broad, general principles are by no means universally recognized as valid.

Details of Certain Psychic Phenomena

The simplest psychic phenomenon, which anyone who is willing to make a little effort can verify, under experimental conditions, is the operation of the time sense, by means of which one can "set" one's mind, like an alarm clock, to wake at any predetermined hour. The first experiments may be unsuccessful (like any other early experiments along a new line), but persistance will be rewarded, in time, by the development of a new faculty which is not now possessed by more than a very small percentage of persons.

Telepathy—the power to transmit an idea from one mind to another without the use of words, manual signs, written symbols or other physical means of communication—has been demonstrated so often and is so thoroughly open to any sincere and pertinacious investigator that it is now generally accepted as a fact by all informed and open-minded thinkers. This being true, and granting, for the moment, the survival of individuality beyond physical death, the possibility of communication between incarnate and excarnate individuals should not require too great an exercise of credulity.

Intuitive perception, by means of which we suddenly find ourselves recognizing the relationships of certain facts or discovering the solutions of problems, without the conscious and immediate use of any intellectual processes, is so common as to be within the personal experience of almost everyone who does any genuine thinking at all.

Clairvoyance and clairaudience are faculties much more rarely possessed and not so readily susceptible of deliberate and purposeful development. But the records of the operation of these powers are now so voluminous and so thoroughly authenticated* that they can be wholly rejected only by those who are superstitious about falling into superstition. There are, in fact, many who have seen visions, heard voices and dreamed dreams and have resolutely kept silence about these experiences, for fear they would be considered mentally unbalanced by their friends and neighbors if they spoke freely about what they knew.

A logical and reasonable explanation of these faculties, as well as of psychometry and various other matters, is difficult or impossible so long as we limit our thinking to three dimensions; but as soon as we recognize time as being the fourth dimension, all becomes simple and many seemingly insoluble problems are immediately resolved.

To those who are sufficiently interested along these lines to do some "hard" study, I recommend Ouspensky's "Tertium Organum" and that fascinating book, by the British scientist, W. J. Dunne, called "An Experiment With Time." Those who will study this latter volume closely and will carry out the experiments, which are described in some detail, can *demonstrate* to themselves the occurrence of clairvoyant perception of future events.

The fact that we are now understanding and using vibratory activities wholly unknown within the memory of many of us, such as those of radium, ultraviolet rays and the radio, should make us hesitate to cast out, without serious consideration, the possibility that there may be other and

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*See Osty's "Supernormal Faculties in Man;" Lambert's "General Survey of Psychical Phenomena;" Geley's "Clairvoyance and Materialization"; and the reports of the British and American Societies for Psychic Research.

different rates of vibration, unperceivable by most of us, at present, but known and used by a few who have given long study and much effort to the development of special faculties for their perception. In fact, the more proficient occult investigators declare that every one of us possesses rudimentary organs for the perception of higher rates of vibration, which may be developed and trained by proper exercise.

When we come to those metapsychic phenomena based upon the appearance and manipulation of ectoplasm, we enter a field which has been heavily bombarded by the self-appointed and generally wholly uninformed exposers of alleged frauds. Remembering that metals can be precipitated in their pure state from solutions of their salts, by the passage of a current of that impalpable stuff we call electricity, does it require too great a stretch of the imagination to grant, tentatively at least, that it may be possible, for those who possess the requisite knowledge and power, to cause the precipitation, out of the atmosphere, of a sufficient number of those minute physical particles which are always suspended in it, to render a non-corporeal object temporarily perceptible to the eye or to the camera?

As a matter of fact, the instances of such phenomena, occurring under conditions as rigidly controlled as are most experiments in chemistry or physics, now make up a mass of evidence far too formidable to be brushed aside with a contemptuous gesture.

Summary and Comments

Every science requires of its followers the development of certain special technics and the surmounting of certain difficulties, and no one who has not considered these requirements, to some slight extent at least, is considered qualified to express an intelligent opinion upon any of them. The science of psychic phenomena is no exception to this rule. He who would speak with any acceptible authority upon the subject must have given it some real study.

Scientific proof of any class of phenomena must be accepted on the lines laid down by the workers in that particular line, not upon any arbitrary basis imposed by those who have little or no appreciation of the subject. We can not expect the mathematician to "prove" things to us if we deny the powers and properties of figures; nor demand that the chemist bring us a specimen of helium gas in a wicker basket before we will acknowledge its reality. Scientific proof is the light of reason applied to the phenomena of life; not a demonstration by means of a microscope and balances. We must "prove" superphysical matters according to superphysical standards, or not at all.

The fact that certain faculties are possessed by relatively few persons does not rule them out of scientific consideration. Those who have actually seen the new planet, Pluto, probably number no more than a hundred or so; and it is said that scarce a score of persons are able to comprehend the connotations of Einstein's theories; yet we do not, for that reason, refuse to acknowledge the scientific value of these observations and deductions.

Sensuous perception is the alphabet only, in the great curriculum which reveals to the Knower the mysteries of its own being. Only the mere rim of being can be perceived by means of the sense organs.

Science declares matter and force to be indestructible (though they may be interchangeable), yet inconsistently denies the permanence of the one element, *intelligence*, which alone renders possible the orderly sequence in the manifestations of these two permanent elements. If force is eternal in its action, this includes intellectual or soul force, as well as that of material origin.

The man who denies the probability of new developments in science, along lines now considered as revolutionary, must be blind to the teachings of history, which show that such trail-breaking has occurred in every generation of the past.

The valid material dealing with psychic phenomena is now very voluminous, and if the orthodox scientists feel that it is not being handled in an adequate manner, they are earnestly urged to familiarize themselves with it and bring the aid of their scientifically trained minds to the assistance of those who are doing the best they can to put it into a shape that will be readily accepted by all thinking people.

Suggestions for Study

"General Survey of Psychical Phenomena"—Lambert: Knickerbocker Press.
"J. H. Hyslop-X: His Book" — Tubby; York Printing Co.

"The Great Problem"—Johnson; Hutchinson & Co., Lt., London.
"Voices from Beyond"—Hardwicke; Harkell Co., Niagara Falls, N. Y.
"Raymond"—Lodge; George H. Doran Co.
"Enigmas of Psychic Research"—Hyslop; H. B. Turner.
"Supernormal Faculties in Man"—Osty; E. P. Dutton & Co.
"The Evidence of Immortality"—Dr. Jerome A. Anderson; The Blavatsky Institute, Toronto.
"Human Personality and its Survival of Bodily Death"—F. W. H. Myers; Longmans, Green & Co., New York, 1904.
"Thirty Years of Psychic Research"—Richet; The Macmillan Co., New York, 1923.
"Clairvoyance and Materialization" — Gustave Geley; T. Fischer Unwin, Ltd., London, 1927.
American Society for Psychic Research, Hyslop House, 15 Lexington Ave., New York City.
28 E. Huron St.

Latency in Gonorrheal Urethritis in Men

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THE gonococcus is known for its marked tendency to colonize and lie dormant in the tissues of the male urethra and its adnexa. This propensity of the organism gives rise to the condition known as latency in gonorrheal urethritis in men.

The literature presents considerable data relating to latency of gonorrheal infection in the male. Noegerrath, in 1887, had postulated that ninety percent of all gonorrheal infections in men and women are never completely cured. He formulated the well known dictum, "Once gonorrheic, always gonorrheic", thus paraphrasing Ricord's equally familiar aphorism, that "man knows when gonorrhea begins, but only God knows when it ends". Buschke and Langer[1], in their textbook, "*Lehrbuch der Gonorrhoea des Mannes*", assert that in latent gonorrhea there exist small, encapsulated colonies of gonococci, found in pseudo-abscesses under anaerobic conditions, the organisms leading a vegetative existence, multiplying very feebly, as they usually do in all anaerobic culture media.

Picker[2], Asch and David[3] and others maintain that gonococci remain dormant in the interepithelial spaces of the urethral mucosa and ducts of the glands, producing no clinical manifestations of their presence and thus establishing a negative phase of infection. If, however, anything occurs that lowers the vitality of the tissues in which gonococci reside, or supplies them with added amount of nourishment, this will invariably tend to stimulate them into a renewed activity.

Judassohn[4], cites cases in which gonorrhea had existed for fifteen to eighteen years. Ricord had treated a patient for gonorrheal infection for forty years, and Dessermeaux for fifty-five years. Luys[5] describes two cases of his own, of forty and fifty-two years' duration. Keyes[6], in an article entitled, "Observations upon the Presence of Gonococci in the Male Urethra", states that no one has a precise idea as to how long gonococci may survive in the glands that empty into the male urethra. "If", says he, "they can survive a year or two, who can deny them a decade?" though he admits that he knows of no case in which gonococci remained viable in the tissues over a period of three years.

Luys[5], on the other hand, believes that gonococci may remain within the urethral mucosa and its adnexa for a much longer time. "It is not rare," he says, "to find patients, who had had no trace of moisture about their urethra for years, suddenly develop general or local complications super-induced by gonococci."

Neisser found gonococci in the "*goutté militaire*" as late as eight years after the onset of infection, and he estimates that gram-negative diplococci can be demonstrated in fifty percent of cases of the so-called "morning drop." Stockes, the iconoclast, comes much nearer to the truth when, in discussing gonorrhea, he states that, in the sociology of this disease, the "gleet" is its most dangerous stage.

McDonagh[7], the well known English venerealogist, states, "In its early stages, gonorrhea usually suffers from the lack of treatment, while in its later stages, from over-treatment. Too many instruments and too-strong solutions may kill the gonococci, but they also may injure the urethral mucosa; an injured mucosa is an excellent nidus for bacteria and it is not uncommon, therefore, to see patients who have been thus over-treated, come up now and again with profuse urethral discharge, due to

lighting up of a few gonococci that had lain dormant in some Littré's gland for a period of years."

David Watson[8], in his textbook "Gonorrhea and its Complications in Male and Female", cites a case of gonorrheal balanoposthitis of eight years' standing and he adds: "My knowledge of the patient enables me unhesitatingly to accept his word in regards to any subsequent exposures to venereal disease". He believes that these cases prove that a relative immunity to the particular strain of gonococcus is acquired by the urethra. The power of this immunity varies in different individuals and probably, in any given case, it applies only or principally to one of several strains of gonococci that exist. In addition to the general immunity, a local resistance is developed, mainly by the metaplasia of urethral epithelium, the cylindrical cells becoming replaced by the cells of squamous variety. The epithelial lining of the glands, however, does not participate to the same extent in the change into resistant tissue and it is, therefore, for the most part, in the glands that we find the site of chronic and latent infections. These alterations in the media ultimately affect the virulence of the gonococci and a condition approaching an equilibrium between gonococcus and the tissues thus becomes established and, as a result, all evidences of activity on the part of the organism, so far as any inflammatory reaction is concerned, may be entirely absent.

Case Report

Case 1.—Mr. L. R., aged seventy-one, consulted me on April 17, 1930, complaining of difficulty of urination and some loss of force and size of the urinary stream, from which he had suffered for the past twenty years. He gave a history of having had gonorrhea about forty years before, which was complicated by left epididymitis. This infection lasted about four months. One year later he had another attack of specific urethritis, lasting six weeks. Since then, having had no signs or symptoms of any disease, he considered himself cured, and three years later he married. He denied any subsequent extramarital sex exposures. Since his marriage the patient has had an occasional morning drop and diminished force of the urinary flow. About twenty years ago he began to complain of dysuria, for which he was treated by numerous "specialists" and at various clinics. For the past fifteen years he had no sexual contacts, owing to total impotence.

Examination revealed a man of medium height and good build, very senile and anemic. There were no major symptoms referable to the cardiac, respiratory, nervous or gastrointestinal systems. There were dry rales over both lower lobes. The heart was enlarged to the right, heart sounds were feeble and the second aortic was accentuated. The abdomen was negative. The blood pressure was normal. Examination of the blood showed: hemoglobin, 65 percent; erythrocytes, 3,100,000; and leukocytes, normal.

On urologic examination there was no urethral discharge. Urine, voided in three glasses, was practically clear, with few fine, mucoid shreds in the first and third specimens. Microscopic examination showed occasional leukocytes but no casts. There was a second-degree hypospadias. The right testicle and epididymis were normal; the tail of the left epididymis was moderately enlarged and indurated, but not tender. Palpation of the prostate gland, revealed it to be normal in size, firm in consistency and freely movable. Both vesicles were palpable, otherwise negative. The entire anterior urethra felt hard and cord-like; examination with a No. 15 French *bougie à boule* elicited a stricture almost throughout the anterior urethra. No urethral discharge was observed prior to or following this examination. Gradual dilatation was then instituted.

At the end of August, after four months of treatment, I was able to introduce, for the first time, a No. 21 French, hard-rubber bougie, which was passed with considerable difficulty. Immediately upon withdrawal of the bougie there appeared a thick, purulent discharge. Microscopic examination of this discharge showed numerous extracellular gram-negative diplococci, resembling gonococci. On three subsequent examinations these organisms were repeatedly present in the urethral discharge. At this time the first glass of urine became markedly cloudy and shortly afterwards the symptoms of acute urinary retention developed. The patient was able to void only a few drops at a time, with considerable pain. Later, on account of the complete retention, he was hospitalized and periodically catheterized. Purulent urethral secretion continued to flow for nine days, later becoming mucoid in character, and at the end of three weeks it stopped.

Urethroscopic examination at this time disclosed that the mucosa of the anterior urethra was pale-gray in color and without the usual glistening luster, the surface being dull in appearance and reflecting but little light. There was no resiliency to the urethral lumen, the folds were absent and the urethra did not collapse behind the tip of the instrument as it was being withdrawn, but remained open, like a funnel, with a distorted, excentric lumen. Extending along the canal a distance of four to five centimeters, from the fossa navicularis to the peno-scrotal junction, there were numerous, hard infiltrations, which appeared as whitened scars. The urethroscopic tube was tightly gripped at the site of these infiltrations.

Pathology

The study of the part that the urethral glands play in the pathology of latent and chronic urethritis is an extremely fertile field. I am strongly of the opinion that the urethral glands constitute the central figure in the pathology of the above condi-

tions and that connective tissue and epithelial changes are secondary. While it is true that affected glands may be found in any portion of the urethra, there are undoubtedly areas of predilection.

According to Howard[9], the first of these is the point of junction between the glans penis and the corpora cavernosum at the lacuna major, which is notorious for the perpetuation of urethral discharge. The second area of predilection is immediately beneath the pubic arch. This is a natural point of narrowing of the urethra and it may be for this reason that we find here a greater amount of pathologic change in chronic urethritis. A third point of predilection is the junction of the bulbous and cavernous portions. These glands are especially prominent in the subacute and recurrent urethritis. In addition to the changes in the glands, we are likely to find here much connective tissue formation, with extensive areas of pure scar tissue—veritable strictures — with the affected glands being enmeshed in the hard infiltrations.

The urethroscope, as modified by Swinburn, McCarthy, Cameron et al., affords a sufficient degree of exposure of the urethral glands to enable us to localize the existent lesions.

Clinical Experiences

Clinically, however, my experience with gonorrhea has long taught me that the genital portion of the urogenital tract is the most resistant to treatment and is the last part of the affected structures to recover. The prostate and vesicles have been rightly called receptacles of neisserian infection. Von Zeissl[10], as early as 1879, declared that "no gonorrhea could exist for any length of time without involving the prostate"; while the later observers, like Finger[11], Bierhoff[12], Waelsch[13], and Frank[14], found prostatitis practically in every case of posterior urethritis. In fact, if we recall for a moment the anatomic structure of the prostate, with its excretory ducts opening widely on both sides of verumontanum, the character of the epithelium, the scarcity of mucus glands and the almost vertical direction of the posterior urethra, which is distended so much of the time with urine and made one with the bladder cavity, all of these factors make it clear that any inflammatory process of the posterior urethra cannot be conceived of without the prostate being involved.

That gonococci may remain dormant in the prostate and awaken years after the original infection has subsided, has been long established by many competent investigators. Wolbarst[15], in his authoritative monograph on gonorrhea says, "Once a man has had gonorrhea involving the deep-seated structures, he need not be surprised to find gonococci in his prostatic secretions years after all traces of the disease had disappeared"; also, "Such a man might have gonococci in his prostate for many years without being troubled by them in the least; the period that elapsed between the beginning of the attack and the discovery of gonococci in the prostatic discharge was, in three cases, as late as eighteen years".

I have personal records of cases in which I was able to demonstrate gram-negative diplococci in the prostatic discharge years after the first and only infection.

One case was that of Louis M., aged forty-two, a sexual neurasthenic with marked "gonorrheaphobia". He had practiced coitus condomatus since the apparent cure of his infection, twelve years previously, so presumably there was no symptomless reinfection of the prostate. In spite of repeated efforts, cultures of his prostatic discharge were unsuccessful, but in the direct smear, morphologically, the germ was a typical gonococcus and it was decolorized with the Gram stain.

It is undoubtedly to such residual infections in the prostates, vesicles or urethral glands that a large percentage of gonorrheal infections in young married women may be ascribed, since one would hardly be able to find a man willing to infect his wife. Norris[16], in his textbook "Gonorrhea in Women", cites a case of latent gonorrhea that well illustrates the above contention:

"Six weeks after the marriage, the husband, who was ten years older than his wife, was forced to leave home on an extended trip; upon his return, his wife informed him that she had developed a purulent leukorrheal discharge a few days after his departure. The family physician was consulted and pronounced the wife's condition to be gonorrhea, the typical organisms being found in the smear. On this evidence the husband instituted divorce proceedings, based on infidelity. Fortunately, at this period, the wife visited a gynecologist, who induced the husband to stay the legal proceedings until after he had been examined by a genitourinary surgeon.

Up to this time the husband had denied any infection, and indeed, no subjective nor objective symptoms of chronic or latent gonorrhea could be elicited by any of the ordinary

means. Repeated cultures of the smear from the urethra were negative, and it was not until the deep massage of the prostate had been resorted to that gonococci could be demonstrated. It was only then, confronted with this incontrovertible evidence of his infection, that the husband could be convinced of his condition. He admitted later that, twenty years previously, when quite a young man, he had suffered from a slight urethral discharge that had appeared after an illicit coitus, the only time in his life he had had intercourse with a woman other than his wife. In this case, both the husband and the wife were persons of a high degree of veracity and integrity, and there is every reason to believe that their statements were true."

Summary

A case of latent gonorrhea in a male, aged seventy-one, is here presented. The salient features of the case are: The patient admitted having the first gonorrheal infection about forty years ago and the second a year later; his first attack was complicated by epididymitis. About twenty years ago he began to be treated for urethral stricture; he had continued this treatment intermittently since then. For the past fifteen years he has had no sex contacts, due to impotence.

The questions of duration and the modus of exacerbation in this case are pertinent. According to the history, the patient, owing to his impotence, had had no sex exposures for the past fifteen years and suffered his last attack of gonorrhea about forty years ago. We must consider, then, the duration of this infection to be at least fifteen years and possibly forty, from the time of the last admitted attack of gonorrheal urethritis.

As to the mechanism of exacerbation, we may assume that, in this case, forceful dilatation of the urethra by a hard-rubber bougie, caused the breaking up of an old, encapsulated lesion, which harbored a colony of virulent gonococci. From the urethroscopic findings, it is evident that the lesion was located at the middle part of the anterior urethra, at which point hard infiltrations were demonstrated.

Conclusions

Gonococci have a marked tendency to colonize in the tissues of the urethra and its adnexa.

Gonococci may persist in the male urethra and its adnexa for years. They may become encapsulated in the urethral glands, producing no clinical manifestations of their presence.

Relative immunity to the particular strain of gonococcus may be acquired by the urethra; also a local resistance is developed by the metaplasia of urethral epithelium.

Prostate and vesicles are especially prone to be the reservoirs of dormant gonococci. Anything that lowers the vitality of tissues in which gonococci reside or supplies them with more nourishment will tend to stimulate them to renewed activity.

As long as a single living gonococcus remains hidden in any part of the genito-urinary tract, the disease may break out, months or years after all traces of the original attack have disappeared.

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Education

Education is leading human souls to what is best, and making what is best out of them; and these two objects are always attainable together and by the same means. The training which makes men happiest in themselves also makes them most serviceable to others.—John Ruskin.

Taste Sensations and the Digestive Functions

(A Preliminary Report)

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THE widespread general recognition, by the lay mind as well as by workers in the field of nutrition, that the emotional state of the diner may be as important for his digestion as the food he eats, has been approached as a scientific problem of marked human significance by a group of workers in the Colgate University Psychological Laboratory during the past year. The general problem has been reduced to a laboratory study of elementary basic factors in tastes and their relation to essential digestive processes in the mouth and stomach.

A combination of methods has been used, drawing both from psychophysics and from physiologic chemistry. Psychophysics was used in providing the technic for standardizing the simple taste sensations used, both for purity and for strength of taste. The technics of physiologic chemistry were necessary for making the analyses of gastric secretion and other phases of the digestive functions; assistance in these technics was given by Byron S. West, M.D.

Tastes Used as Stimuli

Sweet, sour, salt and bitter are the four elementary taste sensations; there are no others. Ordinary food provides a blending of these four taste sensations, to which is added the olfactory sensations from the smell of the food and cutaneous sensations, such as warmth and smoothness, from the physical quality of the food. As commonly — and erroneously — used, the term taste covers both the smell and the feel of the food. The experimental work has been done only on taste itself, not on the medley of taste, smell and touch, which is often mistakenly called taste.

Colorless and odorless solutions at room temperature were used for the taste sensations. Sweet was produced by a solution of cane sugar, sour by dilute hydrochloric acid, salt by a solution of common table salt and bitter by a dilute quinine solution. The methods of psychophysics were adopted to standardize the strengths of these solutions so that there was an equality of strength. Richard Kehoe and Cameron Farquhar were in charge of this phase of the work. It was necessary for each taste stimulus to be of known strength of taste; the sweet must be no more sweet than the bitter is bitter, otherwise the results would be misleading, since it could not be told whether the effects noted were due to the differences in the simple taste quality or to the unknown differences in the strengths of tastes being compared.

A zero point in this taste scale was obtained for each of the solutions as the chemical concentration which was just barely perceptible as containing the taste. A concentration of 100 points was then found for each solution as the chemical concentration above which further increases produced no perceptible increase in the taste. Only slight individual differences appeared in the determination of these zero and 100 points, indicating, possibly, a strong biologic role for the sense of taste. These variations from person to person were least with the solutions of common table sugar which were used for the sweet taste.

The "taste thermometer" points of 25, 50 and 75 have been determined experimentally, using the psychologic method of least perceptible differences. It is these three points on the scale of the intensity of the elementary tastes which will be used for first experimentation on the psychologic effects of taste on digestion. This "taste thermometer" has no below zero points, although it is anticipated that when we get into work on boarding house foods some points below zero will be necessary; an additional scale with negative values is under consideration for stating the findings when work has progressed to the point that complicated dishes of food are used.

The present preliminary results are for taste stimuli at 25 point concentration.

Emotional Effects Shown by Breathing Changes

Graphic records of breathing were obtained by attaching a Verdin pneumograph to the chest of the subject being experimented upon, and connecting the tambours

of the pneumograph to a recording tambour, which wrote an account of the breathing on the smoked paper of a kymograph drum. The breathing record with a sweet taste shows slightly slowed and deepened but still normal breathing during the period when the sugar solution was in the mouth, followed closely by breathing similar to that of the control period; the slightly slowed and deepened breathing while the sugar solution was in the subject's mouth was accompanied by a pleasurable mental state in which attention was given primarily to enjoying the taste.

The record for the sour taste reveals shallower and restrained breathing, as though the subject were "drawing himself into a ball" to avoid the moderate unpleasantness. This breathing persists for the full minute, although the taste solution was removed from the mouth after 15 seconds. The salt taste reveals a marked distortion of breathing, approaching gasping for air in character, but some recovery toward normal is shown after the taste solution is out of the mouth. The bitter record differs in showing an after-effect about half a minute after the taste has been removed from the mouth; this after-effect amounts practically to a sigh. After-effects from the bitter and salt taste are still noticeable during the fourth minute after the taste stimulus, while the sweet and sour tastes give practically normal records.

The inference from these data is that bitter and salt have a noticeable effect on breathing, which suggests an emotional tone of displeasure arising from these tastes and which persists after the taste has been removed from the mouth. The emotional tone of pleasure possibly arising from the sweet and sour taste is accompanied by but little disturbance of breathing.

Influences on Stomach Contractions

Stomach contractions have a part in the stomach digestion of food, their function being primarily mechanical. In the case of the empty stomach, however, these contractions become the basis for the sensation of hunger or actual hunger pangs. The contractions of the full stomach, which assist digestion mechanically by macerating and agitating food, must be distinguished from the periodic and relatively intense contractions of the empty stomach, which are known as hunger contractions.

Graphic records of the contractions of the stomach, both when empty and when filled, were obtained from a sterilized balloon which was swallowed and inflated when in the stomach, so that a change in its size by the contraction of the stomach caused a proportionate change in air pressure in a recording tambour in the test room, which wrote on a smoked paper covering on the drum of a kymograph. This recording apparatus was developed by E. Lawrence Smith and Cameron Farquhar. The taste solutions were the same as those previously described and were kept in the subject's mouth for 15 seconds; they did not enter the stomach.

The *hunger contractions* of the empty stomach are stopped by all four elementary tastes as soon as they are placed in the mouth. This inhibition of the hunger contractions lasts as long as the tastes remain in the mouth, but bitter and sour can inhibit these normal hunger contractions for as long as a quarter of hour.

The influence of the four tastes upon the *normal contractions of the full stomach* engaged in digesting food is as follows: The sweet taste lessens the violence of the contractions, although they still persist in the full stomach. The sour taste increases the abruptness of the contractions the first minute, while five minutes later the contractions are inhibited almost entirely. Bitter has the same effects as described for sour. The salt taste produces an immediate and marked lessening of the amount of the contractions, but with an increased frequency ("quivering"), and is followed by almost tetanic contractions five minutes later (marked tetanic contractions occurred in the fourth minute of the record).

These taste effects on the contraction of the stomach at work digesting a meal occur immediately upon the introduction of the taste into the mouth, resembling in this respect the action on hunger contractions. The effects are different, however, in that the bitter, sour and salt tastes have the most inhibitive effects upon the contractions of the stomach at work digesting a meal; the sweet taste has a slight and almost negligible effect upon reducing the mechanical agitation of the contents of the digesting stomach.

Effects upon Secretion of Saliva

Saliva was collected by Lashley's saliometer, which is held gently but firmly over the duct of Stenson where saliva is discharged into the mouth cavity. The tube

from this saliometer carries the secretion to a counterpoised mercury relay switch, designed by Wayne G. Benedict, Jr., and the late Lawrence L. Johnson. As each drop of saliva strikes the plate of the relay switch, an electro-magnetic writing point makes a mark on the smoked paper of the kymograph. The same four taste solutions previously described were used and each was retained in the mouth 15 seconds.

Salt and bitter tastes gave no noticeable variation from normal in the drops of saliva secreted. The sweet and the sour tastes, however, produced an increase in the flow of saliva by about 30 percent. The sugar produced a rather steady increase, which lasted for some five minutes after the taste was out of the mouth, while the acid (sour) produced a sudden rush of saliva, followed by a diminution.

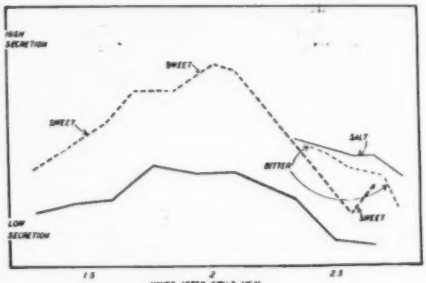
Influence on Gastric Juices

The flow of saliva and of gastric juice is the most significant phase of the pre-intestinal digestion of foodstuffs. The rate of gastric secretion was determined by chemical analyses of samples obtained from the stomach. The subject ate an Ewald test meal of tea and toast, and at fifteen minute intervals a sample of the stomach contents was secured through a Rehfuss tube. This sample was strained through fine cheese cloth and 1 cc. of the sample was diluted with 15 cc. of distilled water. Two drops of a 1 percent alcoholic solution of phenolphthalein were then added as an indicator. This mixture was titrated with 1/100 normal sodium hydroxide solution until the acidity of the sample of stomach contents was neutralized. The amount of sodium hydroxide needed to neutralize the sample gives an index of the gastric secretion incorporated in the sample.

It has been shown by other experimenters that the socalled psychic secretion of gastric juice is not increased by chewing indifferent and tasteless substances such as paraffin. There is some slight increase in the secretion of gastric juice from seeing, smelling or thinking about food. Where accidental injuries have made it possible to secure gastric juice directly from the stomach, it has been found that the greatest gastric secretion results from tasting desserts and the next greatest secretion comes from chewing meats.

Ordinarily a period of two to four minutes elapses after tasting a substance before the secretion of the gastric juice is stimulated. No similar latent period was observable, however, for the stimulation of the flow of saliva by stimulation by various tastes.

Two hours after an Ewald test meal the gastric secretion is usually declining rapidly from minute to minute. It is during this declining period that the most sensitive tests can be made of the effects of tastes: during the early period the food itself serves as a chemical stimulus within the stomach for the secretion of gastric juice, and when the secretion is on the decline we have a most favorable time for determining what influences will cause a rise in the curve.



COURSE OF GASTRIC SECRETION AS INFLUENCED BY TASTE.

The accompanying graph presents the data from one subject. The heavy solid line shows the course of the gastric secretion following the Ewald meal, with no taste stimuli being used; the high point is reached about an hour and forty-five minutes after the meal, and gradually falls after that time.

The heavy dotted line shows how the sugar solution, tasted for 15 seconds at each point indicated, but without entering the stomach, caused a marked increase in the gastric secretion. At 110 minutes after eating the meal, for instance, the gastric secretion appeared to have reached its maximum, being already lifted to a high level by the sweet taste given 90 minutes after the meal; but when the sweet taste was given again at 115 minutes it boosted the secretion still higher. Similarly, when the taste was given again at 155 minutes there is another abrupt increase in the secretion.

The negative results of the bitter taste are shown in the light dotted line. After each of the two points where the bitter taste was given there was a continuation of the drop in secretion, the bitter appearing to be without effect in stimulating the secretion.

The light solid line indicates that the salt taste stimulates this secretion to the extent that the customary loss is counteracted, although it is not able to produce a distinct rise.

SYNOPSIS

Measurements of the flow of saliva, gastric digestion, and stomach contractions in healthy young men show that tastes held in the mouth for a few seconds have a psychologic effect upon these digestive processes without the taste substance entering the stomach. These measurements give rise to the following inferences:

1.—All elementary tastes, except possibly bitter, have, in general, stimulating effects on one or more of these processes.

2.—There are indications of a differential value, not all elementary tastes affecting these digestive processes to the same extent and in the same direction; sweet and salt in general, produced the most favorable results.

3.—All the elementary tastes stop the hunger contractions of the empty stomach.

4.—Salt, sour and bitter lessen the contractions of the stomach at work digesting food, while sweet does not have the same moderately deleterious effect.

5.—Sweet and salt tastes increase the gastric secretion, vindicating the old-fashioned custom of eating a sherbet between courses, and especially a second dessert some time after the meal.

6.—Introspective accounts indicate that the beneficial effects following a sour taste may be due to a contrast effect, which makes succeeding tastes appear more sweet.

7.—Barely perceptible tastes have no consistent or significant effects, but moderate strengths of tastes have greater beneficial effects than the appearance of food studied by other laboratories; the taste of food seems to be more valuable for digestion than its appearance.

8.—The most marked and most favorable effects have been obtained, not from an elementary taste, but from the taste of a bar of sweet chocolate, which is the only complicated taste used so far in the work. The experiments are being extended to include further work with complicated tastes.

Keratolysis

The Bleaching and "Peeling" of the Skin

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COMES a day in the life of every woman when there appears a minute wrinkle in her face; when, because of age, pernicious habits, disease or exposure to the weather, her "school-girl complexion" loses its alluring freshness, and immediately, if she be one who cares for her personal appearance, she hies forthwith to a "beauty specialist," seeking relief from the ravages of time, climate or indiscretions. The beauty specialist may be one who dares to do and takes upon herself the task of removing the wrinkles or restoring the complexion; again, the specialist may be conscientious or timid or both, and refers the patient to a surgeon or dermatologist for treatment.

Frequently the surgeon has devoted most of his time and study to major surgical problems and wots not of the wrinkle and the removal thereof, nor of the restoration of the bloom of youth to my lady's complexion; too often the beauty specialist is ignorant of the principles of treatment and the dangers involved in the work and "rushes in where angels fear to tread," resorting to some bleaching or "peeling" procedure which may or may not effect satisfactory results, which is dangerous to the patient and which, more than once, has ended in disfigurement, deformity and even fatality.

The several laws controlling the practice of cosmeticians limit their activities to the surface of the skin and prohibit the use of surgical instruments. One result of this legislation was the initiation of a search for some non-surgical method of eradicating wrinkles and epidermal discolorations. Many operators began experimenting upon the skin of patrons who, in their despair, were willing to submit to any form of treatment offered by these more or less scrupulous operators, which

promised relief. Out of this mass of experimentation there have emerged two methods of skin treatment which are now largely in vogue—the phenol and the mercurial.

The Skin

Before going further with this subject, let us consider the structures with which we are to work. Of primary importance is the patient's skin, and for our purposes we need consider only the gross anatomy thereof. The skin consists of two layers known as the corium or true skin and the epidermis, cuticle or "scarf skin". This latter, which is the part involved in the bleaching and peeling operations, is made up of a mucous or pigmentary layer, over which there are strata of transparent, horny tissues. The pigmentary layer is of especial interest, as that is the one anatomic element of the cuticle with which we are concerned. In the corium or true skin is a mass of capillaries which nourish the skin and give to it the varying degrees of red color. The complexion, meaning the color of the skin, depends upon three factors: the thickness and transparency of the horny layers of the epidermis, and the quality and quantity of the blood circulating in the corium.

The pigmentary layer, which is provided by nature to protect the body against any adverse effects of light, has always been an enigma and opinions differ as to its origin, endurance and disappearance. It is known that the epidermis is built up by the migration of cells from the lower layers of the skin; that these cells, when they first appear in the mucous layer, are colorless, but soon take on a color which may vary from a reddish yellow ("flesh") to the deep-brown, almost black, of the negro, due to the absorption of varying amounts of a coloring matter known as melanin; and that, as these cells leave the mucous layer, passing upwards into the horny layers, they gradually lose this pigment and become transparent.

In any operation contemplating removal of the epidermis, cognizance must be taken of the corium or true skin lying immediately below the pigmentary layer, which consists of a papillary layer, made up of finger-like prominences or papillae, which are supplied with blood-vessels, nerves, and lymphatics, and a reticular layer, composed of loosely-arranged bundles of connective tissue, which merges with the papillary layer above and with the subcutaneous tissues below. Beneath the corium is a mass of fat and connective tissue, hair follicles, sebaceous and sweat glands. Any operation or injury which invades the corium invariably leaves a scar and there is the possible development of any one of several undesirable sequelae. An aseptic incision, when properly treated, heals by first intention, with a fine, linear scar and the formation of a minimum of cicatricial tissue; a deep burn or the loss of an extensive area of tissue heals by granulation, with the formation of a large amount of cicatricial tissue and a large scar.

Every invasion of the corium threatens interference with the function of the skin. Cicatricial tissue, as a rule, contains no blood vessels or sweat glands and is prone to contract, thereby giving rise to disfigurement or deformity. Scars are occasionally painful and often take on a color different from that of the surrounding skin. In many cases, when there is no destruction of the corium, the action of the chemicals used in bleaching or peeling procedures will stimulate the growth of the hair, transforming an insignificant lanugo into a conspicuous hair growth. There is a possibility of perverted hair growth resulting in "ingrown" hairs, in changes of color and other embarrassing conditions. These are matters which should be told every applicant for treatment *before* the treatment is begun, preferably in a written report, and a carbon copy of the report placed in the patient's case record.

When a patient applies for skin bleaching or peeling, the first thing to be determined is the necessity for and advisability of such treatment—matters which involve questions of diagnosis and etiology. In nine-tenths of the cases, age will be the chief etiologic factor, but the other one-tenth may be of such a nature as to cause endless trouble unless the cases are carefully studied. Changes in pigmentation may be primary, secondary or congenital. Primary or idiopathic changes may be due to irritation, such as follows the local application of heat, certain drugs, friction or prolonged exposure to the sun or ultraviolet rays, and are usually localized to the particular exposed areas. Secondary changes appear as the effects of some disease, frequently of a remote organ, as the bronzing of Addison's disease, or in connection with a physiologic function, as the macules of pregnancy and chloasma uterinum. Con-

genital changes are noted in moles and pigmentary nevi.

Leukoderma often presents with deeply pigmented margins or darkened macules in the albinous areas, and the patient asks to have the margins "tapered off" or the macules removed. Lentigo, or freckles, is an excessive deposit of pigment in pinhead-sized areas, usually due to the action of the sun's rays and most frequently noticed in red-haired individuals. Chloasma, "liver spots" and "moth patches," all grouped under the term melanoderma, are due to physiologic causes and usually disappear upon the termination or removal of the cause. A yellowish discoloration of the skin may be due to jaundice, anemia or other extra-dermal disease and is not a true pigmentary trouble. The skin occasionally takes on a blue or slate color following the use of preparations containing silver salts. Syphilis, in its earlier stages, often gives rise to copper-colored spots, appearing most frequently on the body and extremities. A brownish discoloration may be due to an infection with tinea versicolor.

Because of the varied etiology of pigmentary changes, it behooves those who are not familiar therewith to secure the opinion and advice of a dermatologist before initiating any form of bleaching or peeling treatments.

The Chemicals Used

Bleaching and peeling treatments call into use drugs or chemicals which will cause desquamation or exfoliation of the epidermis, the process being technically known as keratolysis and the agents as keratolytics. In the analysis of 46 proprietary preparations sold to the public as skin bleaches, 21 of them were found to be therapeutically inert and nothing but frauds; 10 were found to contain corrosive sublimate and 9 contained ammoniated mercury, two virulent poisons which made the preparations a menace to their users; 6 others contained either salicylic, oxalic, citric or lactic acids; and one depended upon hydrogen peroxide for its bleaching potency.

The fact that an alleged bleaching or peeling preparation is therapeutically inert does not mean that it is harmless. Such preparations are intentionally compounded from harmless drugs to keep their vendors out of trouble, but they are deliberately sold to the trusting, but deluded, public for mercenary purposes only and the harm comes from the delay incident to their use leading to aggravations of the disfiguring condition and the possible development of a disability necessitating surgical intervention.

The drugs used in bleaching and peeling are many and varied, inasmuch as the acquisition, maintenance and retention of the bloom of youth has been a feminine desideratum since January 1, 4004 B.C. We are told by one ancient writer that "frog's milk" (the "juice' from freshly-laid frog's eggs) was most efficient as a face bleach, and by another that an "all-flowers poultice" (fresh cow manure) was useful in restoring faded roses to the complexion.

Modern medicine has evolved more effective and less repulsive remedies. To detail the uses and physiologic actions of all of these would create what, to many, would be an irksome verbosity; therefore these remarks will be limited to a few remedies, the use of which can easily be mastered by any physician of ordinary skill, who will make a study of their actions under various conditions. There are some practitioners who perform miracles with a drug that fails others, and the fault lies, not in the drug nor in the patient, but in the fact that all have not thoroughly mastered the use of the drug, whereas the successful confreres have, by much study and long practice, acquired a special knowledge of the properties and capabilities of the drug, thereby better knowing when, where and how to apply it, which, by the way, is the secret of success in the use of any drug or therapeutic procedure.

One remedy most in favor is the bichloride of mercury, which is applied in a one-percent solution or ointment. Before applying this, or any other remedy, the skin should first be washed with a freely lathering soap and hot water, then mopped over with a mixture of equal parts of cleaning naphtha and a carbon tetrachloride, again washed with clean warm water, without soap, and wiped dry with a clean sterile towel. This removes from the skin surface and pores all dirt, perspiration and oil, affording a clean field, which permits the drug to act with evenness on all parts of the skin and tends to uniformity in the end results.

Bichloride of mercury is a dangerous drug to handle, being not only caustic but decidedly toxic and possibly lethal, if too much be absorbed through the skin. Am-

moniated mercury is another preparation used both in solution and ointment. Its action is similar to that of the bichloride of mercury and the same precautions must be observed in using it. A ten-percent ointment, made with lanolin as a base, is a popular preparation.

Salicylic acid is a drug which has been long and successfully used as a keratolytic, chiefly in the treatment of corns and callosities, and is the drug relied upon to give potency to nine-tenths of the corn cures on the market. It can be used in a 20-percent ointment (with lanolin base) or mixed in the same proportion with green soap, the mixture being applied daily for three days or longer, as needed to secure desquamation. The preparation is wiped off, daily and gently, with pledgets of absorbent cotton and fresh portions applied immediately. Salicylic acid is effective in the treatment of freckles and the milder types of pigmentation, but is practically useless for such a peeling as is necessary to overcome wrinkles.

A method which lacks the toxic qualities of the mercurials and is really more efficient when skilfully used is the application of a paste made as follows:

℞	Resorcin	ʒ iv	16.0 Gm.
	Zinc oxide	ʒ i	4.0 Gm.
	Calcium carbonate	ʒ i	4.0 Gm.
	Carron oil	ʒ ii	8.0 Gm.

Mix.

Triturate the three powders together until thoroughly mixed, then add the oil and work into a homogeneous paste. This is spread upon strips of sterile muslin (one-half to one inch wide) and these strips applied to the skin, cutting and moulding to fit snugly all contours of the part to which applied, overlapping as necessary to insure coverage of all parts. These are left in place from three to four days, when they are gently removed, the skin carefully cleansed and zinc oxide or other soothing ointment applied. In two or three days the epidermis comes away in large flakes. Any areas which have not desquamated or "peeled" may be given a second treatment. This treatment necessitates confinement to the home, hotel or hospital for a week or ten days and accomplishes in that time far more than any other procedure except the phenol treatment.

In cases where the skin is unusually thickened by long exposure to weather or where there are many wrinkles of long standing, resort may be had to the application of phenol or chemically pure carbolic acid, a white crystalline substance which is liquefied by melting and mixing one part of pure glycerine with nine parts of the melted crystals.

Phenol (carbolic acid) is one of the most dangerous drugs known to man, being destructive, not only to tissues, but to life, and acting with a suddenness that is terrifying to the ignorant. As police surgeon and coroner, I have seen several cases where death ensued in from two to five minutes after swallowing some of the liquified acid. Many cases of gangrene have been noted following local applications of a two-percent solution as a surgical dressing to injured hands. The toxic effects of carbolic acid can and often do follow its absorption through the skin, hence the person using this agent must be alert to detect the earliest manifestations of toxemia and immediately to administer antidotes and restoratives.

Phenol acts by coagulating the albumen in the tissues—literally cooking them—and, as a rule, one application so sears the parts that further cauterization is unnecessary. One thing experience proved was that the pure acid (90 percent) is safer as an external application than are the weaker solutions, because the instantaneous coagulation produced, almost completely prevents absorption. Fifty years ago, when antiseptic surgery was in its infancy and carbolic acid was one of the most generally used antiseptics, the surgical world accumulated a vast amount of knowledge regarding the action of phenol on the human skin. In spite of the well known toxic and lethal properties of this chemical, it is the one most frequently used by many reckless beauty specialists.

Technic

From the innermost depths of the salon of one of Hollywood's most illustrious cosmetitians, who specializes in "peeling," come the following details of her method. The solutions mentioned in the description are: No. 1, alcohol; No. 2, strong carbolic acid (90 percent); No. 3, a two-percent solution of procaine.

1.—Wash the face thoroughly with coconut-oil soap and hot water, using a wash rag or rubber sponge and rubbing dry with a Turkish towel.

2.—Cleanse the face with ether, applied with a cotton swab, to remove any fat, grease or

sebaceous matter still remaining in the wrinkles and pores of the skin.

3.—Rub solution No. 1 over the skin and wipe thoroughly dry with absorbent cotton. Be sure that all traces of solution No. 1 have been removed before applying solution No. 2.

4.—Wait three minutes (no longer) and apply solution No. 2 with a soft sable or camel-hair brush, stroking evenly back and forth, until the treated area is well covered and shows a white surface. Apply absorbent cotton for two seconds, pressing lightly to insure contact with all parts of the skin, and remove by pulling towards the hair or away from center of the face. If any moisture remains on the skin take it up by dabbing or patting with pledgets of cotton until dry.

Solution No. 2 contains the chemical which causes the skin to peel off, and is both antiseptic and caustic. It is rapid in its action and different skins, that is, the skins of different persons and even the skin of one person in different areas of the body, will react in different ways. Consequently its action must be carefully watched in each individual case. Should the action be too severe or speedy at any spot, it can be slowed down or counteracted by applying, with a small cotton swab, a few drops of solution No. 1. When applied to the living skin it causes a coagulation of the albumen, as shown by the whitening of the tissues; destroys the minute terminal bulbs of the sensory nerves, as shown by the numbness which develops in the affected area; and causes contraction of the tissues of the skin, as manifested by the puckering of the epidermis.

5.—Saturate small pledgets of cotton with solution No. 3 and apply gently over the treated area, keeping the parts wet, to prevent and overcome pain. Apply a rather thick layer of absorbent cotton and wait thirty minutes before treating another area.

6.—In treating the face, the skin is divided into areas by imaginary lines drawn vertically from the center of the forehead to the point of the chin and horizontally at the level of the pupils.

7.—Always treat adjoining areas and carefully overlap the applications of the various solutions, to avoid narrow lines of untreated skin. On the forehead, nose and lips, do not extend the first treatment beyond the central line of the face. On the chin and lower jaw carry the treatment far enough under the line of the jaw to meet the skin of the neck, but do not extend to cover any of the cervical skin not in need of the treatment.

8.—In treating the skin covering the eyelids, have very little of solution No. 2 on the brush and apply it gently, being careful not to get too close to the eyelashes. Have a small pledget of cotton handy to take up any tear drops that may threaten to run out over the eyelid. Do not apply or let any of solution No. 2 get into the inner corner of the eyelids. If the eyelids are not wrinkled or discolored do not apply solution No. 2; if only slightly wrinkled or discolored go over the skin only once, but if badly wrinkled or discolored make two applications. Extreme care must be exercised in applying solution No. 2 to the eyelids, that none of the solution gets upon the eyeball, the inner surface of the lids or in either corner of the eye. The skin and subcutaneous tissues around the eye are exceedingly loose and the reaction from solution No. 2 usually gives rise to much swelling and some discoloration, which may prove to be alarming to the patient, but which is not dangerous if properly cared for, as are such conditions due to other causes.

9.—Cut zinc oxide-rubber plaster to fit the size and contour of the different areas treated, and apply these to the treated skin, carefully overlapping the pieces so as not to leave any bare spots. Over this place a thick layer of absorbent cotton and bandage it firmly in place with a gauze bandage. Leave this dressing in place until saturated with excretion from the treated area, but not longer than seventy-two hours. In removing the zinc oxide plaster, loosen up the edges along the median line of the face and pull toward the hair or ears. Pull gently, steadily and quickly; do not "stutter" in pulling, as such procedure only increases and prolongs the pain.

Gently wipe the "peeled" area clean with small mops of absorbent cotton, being careful not to injure any of the granulating tissue, as such injury may result in damage to the deeper or true skin tissues, with consequent scarring.

Upon removal of the plaster it will be noted the epidermis has been removed from the treated area, which removal constitutes the "peeling" process or desquamation. The desquamated area will be more or less covered with pus, due to suppuration, and there may be a few spots of blood in places where the fine capillaries of the skin have been opened in removing the plaster or by the caustic action of solution No. 2. Here and there over the area there may be an occasional spot which has resisted the keratolytic action and needs to be retouched with No. 2. This retouching should be done carefully, using a very small cotton swab.

The denuded surface is now covered with an ointment of one dram (4 Gm.) each of thymol iodide, lanolin and distilled water. This ointment is applied morning and evening until the skin is completely healed over.

The frontal area, which includes the forehead and temples, is more apt than the cheeks or neck to display abnormal pigmentation, and it is in this area that we find the furrowed brow of the studious and the crow's feet of the hilarious; the cheeks have the baggy eyelids, the naso-palpebral wrinkles, a few of the lower crow's feet and the peri-oral wrinkles; on the neck, the loss of the baby fat gives rise to sagging folds of skin with coarse wrinkles, frequently complicated with large areas of pigmentation. Baggy eyelids, deep wrinkles and sagging folds of skin call for surgical intervention, which should be done before a "peeling" treatment is given. Usually only one-third of the total area is given the phenol treatment at a time.

The liquified phenol is applied to the area to be treated by means of a camel's hair pencil or brush, being careful to cover

all parts evenly and not to apply an excess which may spread to adjacent parts not under treatment. The operator can acquire the technic by practicing on an old kid glove. Almost immediately after its application the covered tissues turn white and an eschar forms, which later turns brown. There is practically no pain connected with these applications, as the liquefied acid has an anesthetic effect, due to the "cooking" of the fine terminal filaments of the sensory nerves.

After one area has been treated and the eschar has been removed, an adjacent area is treated, and in applying phenol extreme care must be exercised that the new application is in exact apposition with the treated surface and that there is no overlapping, as overlapping means double treatment and a possible defect in the result. Small areas which failed to response to the initial treatment may be given a second or third treatment, as needed.

In every case, the patient must be closely watched for early symptoms of phenol poisoning, septicemia or pyemia, and prompt steps taken to counteract, in its incipiency, any threatened toxemia. A special watch should be maintained for any exhibition of idiosyncrasy which may interfere with the attainment of a successful result. As a rule, where the treatment is properly applied to selected cases, the end results are satisfactory, but occasionally there may develop untoward sequelae, such as scars, cicatricial contractions, discolorations, hypertrichoses, and even changes in the color of the hair.

Because of harassing conditions which may arise following these unwelcome aftermaths, it is advisable always to give the patient a written statement regarding the possibility (not necessarily a probability) of failure to attain the desired end; that you cannot guarantee results nor assume any responsibility other than for the exercise of ordinary skill in treatment. Patients should also be informed that the results are not permanent—that the factors of exposure, muscular action, disease, advancing age and other causes, which originally gave rise to the blemished skin condition, will, if continued, bring about a recurrence of the distressing disfigurement.

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The Need for Better Obstetrics

The White House Conference brought out quite clearly what the essentials of a program for better obstetrics ought to be. First, it includes better medical education and training, for the physician, in obstetrics in the widest sense. Second, it means the improved training of nurses and midwives. A satisfactory and practical scheme of midwife education and supervision must eventually be organized, although professional sentiment in this country heretofore has been opposed to this kind of extramural practitioner. Yet the results have been so good, where the method has been given a trial, that the physician must learn to regard the question of midwife practice in a broader way. Third, the program means the education of the patient and the doctor and the various government groups as to what can be accomplished by consecutive care of a pregnant woman in every stage of this process.

The medical participation in all parts of this program is of paramount importance and, as physicians, we can contribute the most substantial aid in its development.—Dr. G. W. Kosmak, *of New York, in* Am. J. Obstet. & Gynec., Nov., 1931.

The Physician Must Know

The scientist who fails in a laboratory experiment may be pardoned, but in the case of men who juggle with human lives, failure is a crime.—Nesta H. Webster, *in "World Revolution."*

PHYSICAL · THERAPY AND RADIOLOGY

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A REVOLUTIONARY APPARATUS

ANOTHER development in electrostatic machines has just been made. Robert J. Van de Graaff, Ph.D., working in the Palmer physics laboratory of Princeton University, has designed a generator capable of developing 1,500,000 volts pressure. It is intended to make a much larger one which will deliver a charge of 15,000,000 volts pressure, for the purpose of obtaining sufficient power with which to operate a super x-ray tube and also it is hoped to be able to break down the nucleus of atoms for further scientific investigation.

The experimental generator consists of two hollow spheres of metal, two feet in diameter, each supported on a glass rod one and one quarter inches in diameter and five feet high. In order to charge them, a silk belt conveyor, operated by a small motor at the base of each glass pedestal, runs up over a pulley within each sphere. The belt conveyors are charged, one negatively and one positively, by means of a continuous corona charge or spray. The small charges on the belt accumulate on the surface of the metal spheres until the pressure is so great that a discharge takes place across the air gap between them. The length of the gap across which the spheres will discharge depends upon the diameter (capacity) of the spheres and the relative humidity of the air. The larger the spheres the greater the pressure in volts which can be generated, the longer the spark-gap across which it will jump and the slower will be the rhythm of the discharge. The greater the humidity the more quickly will the discharge take place and across a larger spark-gap. There is, therefore, almost no limit to the size of such an arrangement, and consequently to the electrical pressure obtainable.

The apparatus is so simple, takes up so little room as, compared with the present-day type of Holtz and Weinshurst electrostatic machines and, moreover, costs so little (the experimental one, with which De Graaff obtained 1,500,000 volts, cost only $90.00) that we expect it will relegate our present machines to the museum of antiquities. Furthermore, this machine can operate super x-ray tubes, from which gamma radiation is expected to be emitted. Perhaps, therefore, all the present types of x-ray machines are with one sweep rendered obsolete.

Far from being a gloomy outlook for the physician, however the manufacturer may look at it, this innovation bids fair

to bring about a wonderful renaissance in electrostatic therapy and a more general use of x-ray therapy, since any desired variation in voltage can readily be obtained by substituting spheres of different diameter, as well as by varying the sparkgap distance.

F. T. W.

Physical Therapy in Medicine*

By Walter J. Turrel, M.A., M.D., B.Ch. (Oxon.), D.M.R. & E. (Cantab.) Oxford, England

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AMONGST its main branches, physical therapy includes spa treatment, comprising the drinking of waters from various natural springs and the employment of baths and douches of many kinds; massage, including manipulation; re-education of movements; the socalled bone-setting and various kinds of rubbing; electrotherapy, including galvanism, interrupted currents of low and high frequency and currents of high potential; and radiation therapy, including infrared, luminous and ultraviolet radiations.

Spa Treatment

Spa treatment has been described by Dr. Gordon Watson, of Bath, as "The bringing into line of all the batteries of Nature and the ingenuity of man against disordered bodily function and the results therefrom." This is a most inclusive definition and could be interpreted as comprising almost every conceivable method of treatment. In a more restricted and a more generally accepted sense, spa treatment is mainly concerned with the drinking of certain nasty waters, of a sulphurous or other repulsive taste, and with more or less complete immersion in naturally or artificially heated medicated baths; and to these two methods I would certainly add the influence of the enforced hygienic discipline, as one of the most important adjuncts of spa treatment.

As regards the value and mode of action of the imbibition of the waters, there appears to exist a considerable difference of opinion among balneologists themselves. I have heard an eminent balneologist commence his presidential address in such terms as these: "An analysis of the waters at our different spas shows that their composition is entirely different; nevertheless we all claim the same results from them. Consequently the benefit produced cannot be due to the constituents of the waters; it must come from the atmosphere and its surroundings. We must, therefore, endeavor to make these more attractive, more like the German spas."

Other balneologists attribute the assumed benefits of the spa waters to the degree of ionization of their mineral constituents and to their radio-activity. The degree of ionization of the waters is estimated by their electrical conductivity; by the addition, however, of various salts in suitable amount, a similar degree of ionization can be readily achieved. So that it is difficult to visualize the superiority of the spa waters on this account.

As regards the claim to radio-activity, it remains to be proved that the extremely minute amount present in the waters has any therapeutic effect. In the application of socalled radio-active pads, I have conducted some controlled experiments, but with entirely negative results. The inbibition of mineral waters does not, however, enter directly into our present subject.

The hygienic discipline at a well-conducted spa is unquestionably of considerable therapeutic value. Take, for instance, the case of a stockbroker, a man much overworked and worried by the anxieties of his business, who often overeats, sometimes over-drinks, usually takes insufficient exercise and, in addition, may be worried by his home life; remove him from his business and home surroundings to a spa, where he is compelled to regulate his mode of life in accordance with the most health-giving conditions—early rising; a walk before breakfast to the fountain, where he swallows a draught of nauseous and mildly aperient sulphurous water; no alcohol; a regular, restricted and easily digestable diet, with a rest after his mid-day meal; with the absence of all business and home wor-

*Read before the Osler Society, Feb. 13, 1931.

ries, and it is easy to understand that he will derive more benefit from any physical methods than he would obtain from similar physical treatment carried out amid the surroundings of his ordinary business and home life. The same argument applies with equal force to the busy housewife, removed from the environment of her home duties.

The immersion and other baths, as administered at the different spas, constitute the main physical remedies of these institutions. Their therapeutic effects are very similar, in their mode of action and in the results that they produce, to those obtained from many other forms of physical therapy. That is to say, they owe their value to their thermal action and to their action in stimulating the afferent nerves of the skin. It has been pointed out by French balneologists that only the thermal baths have any beneficial effects in the relief of neuritis. But, in addition to their thermal action, many of these baths, especially the concentrated brine baths of Droitwich, have a stimulating effect on the endings of the afferent nerves of the skin.

From the point of view of the physical therapist, the skin is one of the most important organs of the body. It may be regarded as a relay station, from which stimuli, such as heat, cold, touch, electricity, barometric pressure, light, etc., are relayed by the path of the afferent nerves to the lower nerve centers, thence to the higher centers, the ductless glands, the vagus and sympathetic nerves, and to the internal organs with automatic activity. In such a manner the metabolism and general functions of the body may be profoundly modified.

It is a striking fact that various agencies, essentially different in their nature, such, for instance, as ultraviolet rays, a moorland walk on a windy day, spray baths, general galvanism or a powerful charge of static electricity, give rise to an improvement of a very similar nature, both in the general health and in local conditions.

Since the only factor that these various processes have in common is the stimulation of the afferent nerves of the skin, it is a logical inference that such stimulation is the causal factor in the good results.

The choice of the stimulus most likely to bring about the desired result will vary under different conditions, and only prolonged experience and an intimate knowledge of their mode of action will enable the physical therapist to select the most suitable method for the achievement of his object.

Baths at Home

There are three comparatively new baths which are very useful, and they are so simple in principle that their administration can be carried out in the home or hospital and does not necessitate a visit to a spa. These are the foam, paraffin wax and contrast baths.

The **foam bath** is applied in the following manner: The ordinary bath employed for our morning ablutions answers the purpose well. A layer of about 4 inches of hot water, at 116°F., covers the bottom of the bath; to this is added 1½ ounces of a soft-soap solution; air is then forcibly pumped in through minute holes in rows of wooden pipes laid on the bottom of the bath. In this way a mass of foam, composed of minute air bubbles, covers the patient reclining in the bath up to the chin. The patient remains in the bath for 15 to 30 minutes, and afterwards rests, wrapped in blankets, for half an hour. The air bubbles afford perfect heat insulation for the body, preventing the escape of the heat derived from the hot water and preventing also the escape of the body heat by convection. Whilst in the bath, the patient sometimes perspires freely from his face, and afterwards from his whole body whilst wrapped in the blankets. The treatment is useful where the manifestations of rheumatism are too widely distributed to be treated by local electrical measures.

The **paraffin wax bath** consists of a suitable vessel (a Welbank boilerette I employ in my own practice), containing a paraffin wax, with a melting point of 120°F. The wax is heated to about 130° or even 140°F., and the limb or part to be treated is plunged into and immersed in it. Its melting point being far higher than the skin temperature, the wax in contact with the skin immediately consolidates, and in its solid state, being a nonconductor of heat, any injurious effects from over-heating are prevented. The wax thus solidified also prevents the loss by convection of the heat derived from the hot fluid wax, as well as any loss from the natural heat of the limb at the point to which the wax has been applied. The part remains in the wax bath for about 5 minutes; it is then withdrawn, thickly coated with consolidated wax. This coating is allowed to remain for about 5

minutes, or until the glowing sensation imparted to the treated part has ceased; it can then be peeled off readily. The skin of the part is then found to be of a bright-pink color, moist and soft.

This treatment is applied for chilblains and many other circulatory troubles of the extremities. In threatened gangrene of the toes, from defective or occluded circulation, this treatment is remarkably efficient. In one or two cases I have seen toes of a dark-blue or purple color, which looked as though they would certainly become gangrenous, quickly regain their normal color and remain apparently cured for several months. In the treatment of such conditions, diathermy or ultraviolet rays would have been contraindicated, owing to the increased congestion or engorgement which such remedies might have produced on tissues in the condition referred to; but in these cases the application of the paraffin wax bath appears to be an absolutely safe and a most effective procedure.

Another form of bath, extremely simple in its application and, at the same time, most effective in suitable cases, such as chilblains and certain other conditions due to defective peripheral circulation, is the **contrast bath.** The only apparatus required for this treatment consists of a basin of hot water and a basin of cold water. Into one or other of these the foot or hand to be treated is suddenly plunged and allowed to remain in the bath until the part has become accustomed to the heat or the cold, as the case may be; it is then quickly withdrawn and plunged into the other bath. The treatment is applied night and morning, for about ten minutes. It is best to commence with the hot water and to conclude with the cold bath, if a good reactionary glow ensues; otherwise it is better to conclude with the hot bath.. When in the hot water, the cutaneous vessels dilate, and in the cold water they contract; in this way the walls of the blood vessels are exercised, bringing about what Sir Robert Jones has appropriately termed "the gymnastics of the arterioles".

Massage

There are, according to Mennell, three main forms: (1) stroking massage; (2) compression massage; and (3) percussion massage.

Massage may act in one of two ways: either reflexly by stimulating the afferent nerves in the manner that I have already alluded to when dealing with other stimuli (massage of the abdominal walls may excite, reflexly, peristaltic movements in the intestines); or mechanically, promoting the movement of the lymph, assisting the circulation, or exercising tension on and so stretching muscles, other tissues, or scars.

Allied to massage is treatment by mobilization. This may consist of passive or relaxed movement, or it may consist of the direction of active movements.

In association with certain forms of electrical treatment, massage is of great value and, when administered after such treatments as prolonged and intensive galvanism or diathermy, its administration takes place under the most favorable conditions and is attended by the best results, the one treatment being the complement of the other. I have often wondered that more electrotherapists do not avail themselves of the services of a skilled masseuse. I am sure that their results would often be much improved by such cooperation. The manipulation of a stiff joint, by a skilled and highly trained masseuse, is an essential adjunct to the electrical treatment of such conditions.

Closely allied to the passive manipulation of stiff joints are the methods of the socalled bone-setters. The medical profession, owing to their neglect of this subject, have only themselves to blame that much of the grist which would otherwise have come to the medical mill has been diverted into other channels. It is absurd to suppose that intelligent observers, such as Sir Herbert Barker, Jackson Palmer and others, who have devoted years of research to the study of the injuries of the knee joint and their cure by manipulation, the experience thus gained often being handed down through generations of bone-setters, should not be more capable of dealing with such conditions by these methods than an ordinary medical man, whose energies have been dissipated over the ills of the whole body.

Much of the disability following an injury is frequently due to adhesions resulting from the organization of inflammatory products consequent upon the traumatism. The snapping of such adhesions, by forcible manipulation, may give rise to a cracking sensation or even sound, which may be interpreted by the patient, under the suggestive influence of the bone-setter or osteopath, as the replacement of a displaced bone. Anyhow, the result, so far as the

patient is concerned, is satisfactory, for, as the outcome of the treatment, he is able to perform movements freely without pain, which previously he was unable to accomplish.

In regard to the knee-joint, Dr. Frank Romer, the surgeon to the Jockey Club, who for many years has specialized in this branch of surgery, writes ("Physiotherapy, its Principles and Practice", 1931.):

"Apart from the appearance and disability of a knee-joint due to a displacement of a semilunar cartilage, a condition is frequently seen where the obstruction has been shown to be due to a hypertrophied fringe of synovial membrane getting nipped between the condyles, or, as Sir William Bennett also pointed out a few years ago, to an organized blood clot. Once these are pushed back into the cavity of the joint, they become absorbed, whilst the reduction of a nipped fringe means freedom from irritation to the inflamed membrane and subsequent return to the normal. In such cases complete cure can be safely predicted and no tendency to recurrence need be anticipated. The large majority of this class of knee troubles, apart from adhesions in the thickened synovial folds, are due to the causes I have mentioned, and not to a loosened or split semilunar cartilage."

From my own personal experience I should like to emphasize most strongly the great importance of securing complete muscular relaxation, under full anesthesia, when carrying out any forcible manipulation. With such relaxation the adhesions usually yield very readily; without it, the force necessary to overcome muscular spasm may result in injuries more serious than those one attempts to remedy.

The chief essential of good massage is that it should be *free from pain*. The worst fault that I have noticed among masseuses is a tendency to seek out a painful spot or area, and, having found it, to pummel it unmercifully: this is an exceedingly bad fault.

Electrotherapy

Electricity is the most important of the physical agents, because it is the most powerful and, at the same time, is the most capable of easy and accurate regulation. It is the most fundamental, because, the more deeply we extend our investigations into the nature of living matter, the more clearly we realize its electrical origin and basis. And finally, it is the physical agent most commonly needed, for there are few disordered conditions in which electricity, in one of its many forms and methods of administration, will not prove of value.

The main forms in which electricity is applied in medicine may be classified as follows:

1.—The constant or galvanic current.
2.—Interrupted currents of low frequency.
3.—Interrupted currents of high frequency.
4.—Currents of high voltage and minute amperage.
5.—Indirectly, from an electrical source, we obtain the radiation therapy, including infrared rays, luminous rays, ultraviolet rays, x-rays and the gamma rays of radium.

The constant or galvanic current is a stream of electricity which flows through a conducting medium with unvarying strength and without interruption. There are no free electrons in the human body and all current electricity is conveyed within the body by means of ions—electrically charged particles, atoms or molecules.

When the ions reach the metal electrodes by means of which the current is administered, one of three things may occur: (1) the atoms, yielding up their electrical charge to the metal electrodes, may escape as bubbles of hydrogen gas at the negative, or as bubbles of oxygen gas at the positive pole; or (2) the atoms may cling to their electrical charge and, collecting on the electrodes, may exercise a repellant force (termed polarisation); or (3) they may combine with other atoms to form nascent salts. It is to the last-mentioned action that the main therapeutic action of the constant current is due.

The character of the action that ensues will depend on the nature of the salts so formed. If a bare metal electrode of zinc is employed, a caustic salt, the oxychloride of zinc, will be electrically deposited on the part treated; and this can be utilized for the destruction of septic membranes, sinuses or small growths. If, on the other hand, thick pads, well soaked in a solution of sodium chloride, are placed under the metal electrodes, a non-caustic salt will be electrically deposited within the cuticle and will stimulate the afferent nerve endings of the skin. It will thus be seen that we arrive at a very similar action to that which we have already discussed when dealing with other physical agents; namely, stimulation of the afferent nerve endings. The special virtue of the electric method

is that the stimulating agent is deposited within the cuticle and in close relation with the afferent nerve endings. The action of the electrically deposited salt continues after the cessation of the treatment and this serves to explain the benefit that we derive from this method when treating such conditions as occur in many of the chronic forms of rheumatism of the knee joints, in which cases a more prolonged action is needed than when dealing with acute cases. As a general rule, the electric method should be chosen when the trouble is localized in one or two joints, and the more generally distributed action of the baths is to be preferred when the rheumatic trouble is more generally suffered throughout the body.

The action of interrupted currents of low frequency is due to the relative velocity of the hydrogen ion. There are many and varied applications of these currents in electrotherapy, but their main therapeutic action lies in the power of the muscular contractions excited in this manner to restore lost tone to muscles.

The electrochemical action that follows a sudden onset or break of the current takes place very quickly, but, nevertheless, requires a brief period for its development. If, before the lapse of this necessary interval, the current is reversed, no muscular contraction will occur and no sensation will be experienced. That is to say, with a very high frequency of interruption, the acid concentration will be neutralized by the alkaline, and vice versa, before either has time to become effective. An electric current interrupted at such a rate or frequency constitutes a high-frequency current. The rate of oscillation of these currents may vary from 500,000 to ten million a second.

Many of us think, however, that the vibratory effect of these oscillations, to a degree sufficient to produce the intense heat that they cause, must have some other effect on the tissues than the mere production of heat. There is much evidence to support such an opinion.

The claims of *diathermy* as a therapeutic agent rest, however, on the fact of its deep heating action. By a concentration of this heat on a small point, the destruction of small growths can be readily accomplished with little pain and no bleeding. By certain alterations in the structure of the apparatus the socalled *cutting arc* is obtained: by means of this apparatus the tissues can be cleaved asunder with so little coagulation of the separated surfaces that, on suturing them, primary union may be secured. This cutting arc is now attracting the serious attention of surgeons, especially in regard to brain surgery, owing to the absence of capillary oozing that follows its use.

The currents derived from the *static machine* may reach a voltage of 60,000, but their amperage is usually under half a milliampere. Owing to this small current, their employment is absolutely safe. These currents are employed in an interrupted form (the Morton wave), for breaking down peri- and intra-muscular adhesions: applied to healthy muscles they are painless, any pain that they produce being due to the freeing of adhesions: they can be accurately regulated and, in skilled hands, a maximum effect can be obtained with a minimum of discomfort. Administered in an uninterrupted form, these currents produce a gentle but general stimulation of the afferent nerve endings over the whole body, thus tending to raise the blood pressure and exercise a general tonic action.

Radiation Therapy

Commencing with the radiation of longest wave length, we have first to consider the infrared rays which are of a wave length too long to excite the human retina. They are merely that form of radiation that is emitted from a red-hot poker, are more penetrating that the luminous rays, and are most conveniently obtained from an electrically-heated ring or plate of metal mounted in a movable reflector. Intense heat and a rapid reddening of the skin follow their administration. By adjusting the distance between the lamp and the part under treatment, the heat can be readily adjusted to the comfort of the patient.

As a rule, this treatment is regarded by the patient as a most pleasant one, and relief is often experienced from its application in cases of neuritis and fibrositis. In my experience it is by no means so effective in these conditions as is diathermy, but the two methods may often be combined with advantage.

Radiation from luminous electric bulbs has been, for many years, utilized as a form of heat treatment, either by means of the socalled leucodescent lamps, with

carbon filaments of 500 C.P. or with metal filaments of 1,000 C.P. or in light cabinets with multiple bulbs of 32 C.P. For local treatments I find the application of the infrared lamps more convenient, and this possibly renders them more effective.

Downes and Blount, in 1877, were the first to discover the bactericidal action of ultraviolet radiation. It was not until many years later that the careful researches of Finsen resulted in the successful treatment of lupus by the ultraviolet radiation from the carbon arc.

The credit of initiating the modern application of U.V.R. belongs to a Scottish engineer, Mr. Simpson, who about 1915, made astounding claims for the curative value of the radiations from a tungsten arc, and, in fact, the subsequent employment of pure and highly compressed tungsten rods led to improved results, mainly from the more even burning of these electrodes and the higher amperage which their more homogeneous composition permitted. In my opinion, the tungsten arc remains the most efficient source of ultraviolet rays, on account of the type of radiation that it emits, the unvarying character of its radiation, and the higher amperage that can be employed in its administration.

The local application of ultraviolet rays is utilized with excellent results in the treatment of chronic skin diseases, wounds, ulcers, lupus, scars, etc. Its general administration is employed for the improvement of the general health, the treatment of rickets, tuberculous adenitis and peritonitis, and many other conditions.

X-ray therapy and radium therapy, though forms of physical treatment, do not fall within the scope of this paper.

Clinical Miscellany

Electro-Surgery

THROUGHOUT the country, surgeons are beginning to profit by the methods of electro-surgery. From the smallest benign mole to the largest malignant infiltration, situated in almost any accessible portion of the body, we find electro-surgical methods indicated.

The two methods used in surgery are desiccation and coagulation. These, however, are merely terms. We limit the term, desiccation, to the electrical destruction of benign or superficial growths, the heat used being of sufficient intensity to dehydrate the tissues. This result is made possible by connecting a cord, with a steel needle at its distal end, to the Oudin outlet of a diathermy machine. By regulation of the fine sparks leaving the needle, we are able to remove warts, moles, vascular nevi, exostoses, papillomas, hemorrhoids and infected tonsils, without even the formation of any discernible scars.

Delicate, bloodless dissection, may be performed, as in the removal of sebaceous cysts, adenomas or epitheliomas from the eyelids or nose. A histologic study of any growth after desiccation, reveals such retrograde changes as shrinkage of the cell walls, pyknosis and cloudy swelling. However, the outline of the cell remains, although it is slightly distorted.

Dermatologists remove various benign growths by electro-desiccation, urologists desiccate papillomas of the bladder and urethral caruncles and laryngologists desiccate small tumors on the vocal cords. The current used for all these conditions is the Oudin current.

LOUIS J. GELBER, M.D.
Paterson, N. J.

Hazards of Low-Voltage Electrical Shocks

THERE is danger of the production of ventricular fibrillation when contact is made with a low voltage (110 to 120 volts or even less) circuit, when the skin is thoroughly wet or when the area of contact is large. It is not necessary in such a case that the person should form part of a grounded system.

Furthermore, a person in a bath tub, making through his wet skin an excellent contact with the grounded drain pipe, runs a deadly risk if he happens to touch the metallic shell of a fixture which is in electrical contact with the ungrounded side of the circuit. There are many opportunities for such fixtures to be in this condition.

When the hands are wet or moist do not touch the metallic parts of an electrical device.—DR. H. B. WILLIAMS, of New York City, in *J.A.M.A.*, July 18, 1931.

Roentgen-Ray Treatment of Acne

INDURATIVE, deep, tuberous, furunculous, phlegmonous and cystic acne, starting from papulous acne, being marked by an especially long course and leaving unsightly scars, is the form of acne in which roentgen-ray therapy is chiefly indicated. More than 50 percent of the patients are cured in about 4 months (one treatment each week), while all other therapies are futile. The best technic is Mackee's fractional treatment with small weekly doses, with or without filtering of the rays.

In acne rosacea, roentgen-ray treatment is usually inefficient or even dangerous.—DRS. G. ARCHAMBAULT and A. MARIN, in *Presse méd.*, Paris, July 22, 1931.

RECENT ABSTRACTS

Treatment of Extensive Granulating Areas

A general plan for the treatment of extensive granulating surfaces resulting from burns is outlined as follows by Drs. E. B. Potter and W. S. Peck, of Ann Arbor, in *Am. J. Surg.*, Nov., 1931.

Physical therapy measures are of distinct value to the surgeon in the treatment of extensive body burns.

Ultraviolet radiation acts as a superficial bactericidal agent on infected granulating surfaces and in this manner assists in the preparation for skin grafts. A mild active hyperemia is produced, and possibly a stimulation to cell growth, by ultraviolet radiation.

Ollier-Thiersch or split-thickness grafts form a satisfactory means of covering these large denuded areas. The open-air treatment of freshly applied Ollier-Thiersch grafts is advisable in some instances. The donor site is comfortably dressed by the application of tannic acid.

The length of exposure of the wound is dependent upon the intensity of the source of radiation, the distance from the source to the lesion and the erythema response of the individual.

Three-quarters of an erythema dose will kill bacteria on the surface, produce a mild, local, active hyperemia and stimulate cell growth.

Early active motion, even before skin grafting, is often essential for maintenance and restoration of joint function.

Therapeutic exercise should be prescribed and supervised, so that definite groups of muscles are exercised and the patient's attention drawn away from the disabled member.

Roentgen Irradiation of Tumors

In *Radiology*, Oct., 1931, Dr. Max Kahn, of Baltimore, remarks that, as a rule, the more malignant a tumor, the more sensitive to roentgen irradiation it is likely to be.

Of the curable types of tumor, basal-cell cancer is well known to yield to roentgen irradiation, and, since this type of cancer frequently attacks the skin, superficial irradiation is usually sufficient to bring about a cure. Basal-cell cancer is mentioned simply to call attention to the fact that roentgen irradiation, as well as surgery, will produce a cure, and also that it falls in the radio-sensitive group. When properly treated, either by x-ray or surgery, it seldom recurs.

Fibromas or fibrosarcomas belong to a type of tumor more or less radio-sensitive, and, while some of them will yield to roentgen irradiation and the patient remain clinically well for five years or more, others are only temporarily benefited, recur, and have to be surgically removed. Tumors of this type, therefore, fall in the group of moderate curability and it is always advisable to try roentgen irradiation before operation. Such a tumor is somewhat slow-growing and not infrequently involves the nerve sheath. One case of fibromyxoma of the antrum and nares and another case of fibromyxosarcoma involving the antrum and ethmoidal region, treated with the deep x-rays, are, up to the present time, clinically well at two and two and a half years, respectively.

"Cold Quartz" Ultraviolet-Ray Lamps

An editorial in *Arch. Phys. Therap., X-Ray, Radium Nov.*, 1931, draws attention to a new development in the sources of ultraviolet-ray energy; namely, the "cold quartz" lamp—the production of ultraviolet rays from a source contained in quartz and practically devoid of heat. This is accomplished by passing a high-frequency discharge through mercury vapor contained in quartz. It is the principle used in the cold-light display signs in which neon, argon and other gases are excited to their brilliant illumination.

The "cold quartz" type of lamp yields a far greater ultraviolet output than does any other type of lamp yet known. Its spectrum emphasizes certain untraviolet components and wavelengths, which are occluded or absent in other forms of lamps. It solves the problem of how to carry ultraviolet energy (practically alone) to the deeper recesses in a convenient and effec-

tive form, without the discomfort due to heat and with much greater therapeutic value, because the distance that separated the tissue to receive treatment from the actual source has been reduced merely to the thickness of the wall of the applicator-generator.

"Cold quartz" equipment is furnished in forms intended for general body irradiation and for localized treatment, and can produce erythema promptly.

The clinical results obtained from this new form of ultraviolet energy will be awaited with much interest by physical therapists.

Some technical details and comparative results obtained with "cold quartz" and other sources of ultraviolet irradiation are given in an article by DR. J. S. HIBBEN, of Pasadena, Calif., in this same issue of the journal cited.

BOOKS

Meyer: X-Ray Pathology of Thoracic Lesions

CLINICAL ROENTGEN PATHOLOGY OF THORACIC LESIONS. *By William H. Meyer, M.D., Professor of Roentgenology in the New York Post-Graduate Medical School of Columbia University, Director of Roentgenology in the New York Post-Graduate Hospital. Illustrated. Philadelphia: Lea & Febiger. 1932. Price* $6.00.

With this volume, there becomes available a third recently published monograph dealing with the x-ray study of limited anatomic areas. As stated in the preface, the subject matter is largely that presented in basic radiological courses at the New York Post-Graduate Medical School; as such, it is admirably suited for the student and the practitioner who wishes to gain a concise and workable knowledge of chest diagnosis.

Section I is entitled "The Roentgenological Study of the Thorax" and deals with such subjects as "Fluoroscopy vs. Radiography," "Technique, Posture and Exposure," "The Thoracic Cage, Ribs, Interspaces and Diaphragm," and "Subdivision of the Pulmonic Fields." Special emphasis is placed upon the necessity for at least two views, either dorsoventral and ventrodorsal, or two taken at essentially right angles. Localization in space is based largely upon the simple physical fact that objects nearest the film are sharpest in outline and show greatest definition and the least degree of distortion, as compared with objects located farther away.

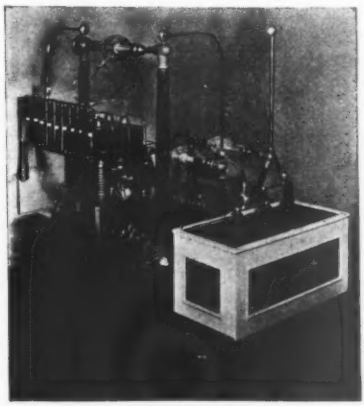
Section II deals with the diagnosis of tissue degeneration, vascular and circulatoy changes, inflammation and exudative infiltrations; Section III with diseases affecting the thoracic cage. In the latter field, we find discussions of such timely subjects as rickets, scurvy and arthritis.

Part IV, the largest, treats of the more special diseases of the respiratory system such as bronchitis, bronchiectasis, lobar and bronchopneumonia, and various types of tuberculosis. While most of the illustrations are plain films, the aid of radiopaque oil injections in specialized fields and in obscure cases, is pointed out. Lesions of the heart and pericardium are the subject matter of Section V; while the last (VI) deals with the esophagus and subphrenic organs, in relation to intrathoracic pathology.

The well-printed volume contains over 180 film reproductions and diagrams illustrative of the text.

D. L. T.

NEWS NOTES



X-ray Snapshot Machine.

X-Ray Snapshots

A new Westinghouse three-element x-ray tube and machine makes possible the taking of an x-ray snapshot in less than 1/1000th of a second. This new instrument was shown for the first time at the convention of the Radiological Society of North America, at St. Louis.

An interesting feature of this new apparatus is that it can be operated from an ordinary house lighting circuit and in appearance resembles a large-size radio tube. The method of operation is similar to water collecting behind a dam. When the accumulated electricity behind the dam is sufficient, the dam is opened, which sends the power suddenly, like a bolt of lightning, through the tube and the fast picture is produced.

THE · SEMINAR

[NOTE: Our readers are cordially invited to submit fully worked up problems to the Seminar and to take part in the discussion of any or all problems submitted. Discussions should reach this office not later than the 5th of the month following the appearance of the problem.

Address all communications intended for this department to The Seminar, care CLINICAL MEDICINE AND SURGERY, North Chicago, Ill.]

PROBLEM NO. 2 (ECONOMIC)
(See CLIN. MED. AND SURG., Feb., 1932, p. 129)

A head surgeon, who had developed certain special technics, found that a number of physicians were eager to learn them and, having no desire to keep his methods secret, readily took those who were interested into his office, for periods of days or weeks, and showed them just what he was doing, without making any charge for this service — in fact, refusing payment when it was offered, as he felt that this teaching was a part of his professional duty.

The news of his work has now spread to the extent where the demands upon his time, as a teacher, threaten to interfere seriously with his practice.

Requirement: What should be his course of action? Should he make such a charge for the instruction he gives as will compensate him for the practice he loses in this way? Or should he refuse to accept any students at all? There seems to be no middle course, without giving offense to worthy and able men who cannot be included in his schedule.

DISCUSSION BY DR. M. O. ROBERTSON, BEDFORD, IND.

It seems to me that this problem is a matter entirely of personal desire, rather than a problem in ethics. The decision should be made entirely in accordance with the personal wishes of the surgeon concerned. Should he prefer to do private practice, he is justified in refusing all students on the ground that his practice prevents his teaching. Should he prefer instructing students to private practice, and there is sufficient demand for his services as a teacher, I see nothing ethically to bar him from so doing. In 1928 I went to New York and took a course in regional anesthesia from Labat, with 8 other practitioners, and paid $200.00 for the course. No one seemed to think, in New York, that this was unethical.

I can see that there may be a very decided economic problem. Unless the surgeon in question is of a rather strong personality, it may be difficult for him to find students willing and able, financially, to pay him sufficient remuneration to keep him busy. If he has no worry on this point, he has no economic problem.

The fact that one is in demand as teacher to his fellows, will not in the least detract from his practice; all classes of patients will be pleased at this quality in their doctor, and will have a tendency to increase rather than decrease his practice.

DISCUSSION BY DR. J. LEWIS WEBB, CHICAGO

The serious fault in medical psychology revealed in this instance is that which leads us to act as though we must give something away if we would be heroes, or that doctors must not think logically along economic lines.

Our code of Ethics is above criticism when it demands that every new discovery and advance must be given to the entire profession. It should be presumed that our colleagues are intelligent enough to grasp these new discoveries and lines of thought without being "wet nursed," so there is no ethical reason that compels the discoverer to *give* his service in training others to do as he has learned to do. Columbus discovered America and, according to our Code, he was required to

announce his discovery and see that decently prepared maps were prepared for the guidance of others. He was not required to pick up and furnish transportation to every one who might have been interested.

There are several methods of procedure, supported by precedent, to follow in such cases as this. The discovery properly announced and winning approval of our profession entitles the discoverer to elevation and prestige in medical organizations, in publications, in college faculties and on hospital staffs. The public and profession accept such elevations and bring financial returns accordingly to compensate the worthy one. Some men have personalities that interfere with their progress along the lines just mentioned and their failure to secure remuneration is attributable to their defective personality.

Other methods, not quite so well thought of but often followed, include the holding of clinical classes at stated periods, for which a charge is made, and the utilization of the student as an assistant during the time he is being taught. He thus handles patients at a profit for his instructor and, in some instances, pays a sum of money in addition.

With so many instances all about us showing how this same problem is handled, I still feel that the questioner is chiefly troubled by a psychic inhibition.

Discussion by Dr. Frank W. Porterfield, Waterloo, Ia.

This problem, while frankly economic, also seems to me to suggest a few words concerning the ethics which might be supposed to be involved.

Taking up this latter thought first, the question arises, is it strictly ethical for a practicing physician to usurp, so to speak, the obvious functions of our medical institutions of learning; but I can not conceive of a hard-working, studious physician who is a student of methods, whose experience extends over a period of twenty years or more, who has not discovered some things of great benefit to his patients, that are not taught in our colleges nor found in our textbooks.

The columns of such journals as Clinical Medicine and Surgery are, of course, open to a report on and a description of such things (and I may say, parenthetically, that the journal referred to is more liberal in this way than some others), but a mere mention in a single article carries little weight, is soon forgotten and often unnoticed, and therefore lost to the people whose physician has overlooked it or forgotten it or who views it with skepticism; and the physician on the firing line, who sees patient after patient improve or recover, is unable to bring his life-saving plan to the notice of other sufferers unless he happens to be one of the "special-privilege men," who may be entirely innocent of any intention to seek publicity but *have* it. The secular press, in its greed for sensation, "plays up" the subject, and this privileged man becomes an advertiser in the most emphatic sense of the term, and the circumstance that it is innocent and incidental, so far as he is concerned, does not alter the fact.

If the surgeon whose problem appears in this *Seminar* has developed a technic that saves lives and lessens suffering, the population of this country in general and the profession of medicine in particular are entitled to know about it. Everyone knows that the knowledge which any physician has is the material thing on which he must depend for the support of his family and the protection of his old age. He is entitled to compensation for whatever use of his knowledge is made; if it is attending the sick, everyone knows he expects to be paid when people are able to pay; if it is teaching his colleagues some unknown and new life-saving expedient, he is no less entitled to that compensation and the profession will, in most instances, stand ready to compensate him, as indeed his own experience proves. So, after all, while he may be criticized by some on ethical grounds, I am of the opinion that, in his place, I should decide to do that which my personal circumstances and convictions suggested was right and proper, feeling sure that no reasonable defender of the code of ethics would claim that I should make a financial sacrifice which would embarrass me, and which, if not made, would withhold from the profession and the public something which was of benefit to humanity in general.

Discussion by Dr. G. M. Russell, Billings, Mont.

Common sense should dictate that this surgeon should charge for instruction, if by giving such instruction his business is

interfered with and his income therefrom lessened.

Any law or rule governing the actions of men is modified by circumstances. Courts of law recognize this.

One going to a postgraduate school for the purpose of acquiring such technic naturally expects to pay for his instruction. It would seem to be just as reasonable to expect such a course of instruction to be given gratis in postgraduate schools, as to expect a physician as an individual to do so.

I do not believe it was the intention of the authors of the medical Code to have it interpreted to mean that professional courtesy must be accorded, to the extent of amounting to positive imposition.

It is my opinion that a physician who would accept instruction under the circumstances related, without offering and being willing to pay for it, is not a just and honorable man.

DISCUSSION BY DR. F. D. LAROCHELLE, SPRINGFIELD, MASS.

Here is a head surgeon who has achieved success probably beyond the average and who is seriously considering making a change in his way of doing things. He does not feel entirely at ease about the matter and he very properly seeks advice and counsel from his fellowmen.

This problem is interesting because of its universal application; almost any physician might conceivably be confronted with the same dilemma.

Now that this man has attained such eminence, the matter is probably no secret and it is fair to assume that he already has a competence and the contemplated addition to his income is not for the purpose of meeting pressing obligations. A manner of doing things that has brought success should not be changed without good reason, but, of course, even a doctor can hardly be expected to harbor pupils for days and weeks without compensation; the line must be drawn somewhere.

Embarrassing as the situation may be, it requires no great stretch of the imagination to foresee new complications if this doctor adopts a commercial attitude. To collect fees from anyone is a science, and from doctors it is an art. This surgeon might find it a horse of another color if he placed his teaching on a business basis.

There is no cut and dried answer to this question. Local customs, the man, the procedure and many other factors arise for consideration. I would not say that it would be wrong to go on the fee basis, but I certainly would think twice before making the change. The first example that comes to my mind is the late John B. Deaver. This gifted man instructed physicians from all over the world, without fee, during his Saturday afternoon clinics. I can see him now, with his boots and outstretched hand and a sardonic grin, discussing all sorts of subjects, not *with* but *to* his audience, and one could discern that the echo of his witticisms, not only delighted his audience, but gave him immense satisfaction. If I had paid one cent for what he taught me, I would have an entirely different feeling about the matter. Great teachers do not work for money. Of course these men must earn a living, like others, but this feature is only an accessory item in their plan and it is much better for a teacher to have as little to do with money as possible.

If this surgeon will go on instructing his fellow practitioners they will find ways of honoring him that may possibly bring him more satisfaction than the modest fees he could collect. I should think twice before accepting a fee of any kind for teaching a fellow physician something that I myself largely learned from other men.

DISCUSSION BY DR. C. H. KENNEDY, FT. SMITH, ARK.

"Self-preservation is the first law of nature"; but that is disregarded too much by some, in that they neglect their duty to self until it is too late, and they then enter the decline of later life with nothing to depend upon but their labor, and their earning capacity is then on the wane.

If one has already provided amply for that time in life when one's ability to earn begins to decline, then it might be a pleasure to give free instruction for the love of the work and the self-satisfaction derived from it; but a thing that is of value should be paid for by those well able to pay and should be appreciated by the recipients.

One should never be expected to sacrifice for those able to pay, and especially for a service that is valuable to them, in that it should increase their usefulness and likewise their remuneration for their bettered services.

DISCUSSION BY DR. E. C. JUNGER, SOLDIER, IA.

The first duty of this busy head specialist is to impart his knowledge to his fellow specialists. The second is to get more help in his office, if he requires it, and to charge a fee for his teaching if he needs the money. Anyone who has reached the point of taking highly specialized instruction ought to be able to pay for it.

We owe a debt to society in general. Making money is only incidental. A living is all we are entitled to, and that only when we earn it. "No man can live unto himself alone."

DISCUSSION BY DR. EDWARD H. OCHSNER, CHICAGO

Taking for granted that the special procedure in question is a real addition to surgical technic, there can be no difficulty in the solution of the problem, if one will apply the following general principle: *Remuneration and reward should be in direct proportion to the time and energy expended and to the value of the services rendered.*

Any surgeon who knows his business knows approximately what an hour of his time is worth to him in money. He should charge to those who wish this special instruction what his time is worth to him in his professional work. If the physicians who want this special instruction feel that his charge is greater than the value of his instruction to them, they will naturally "choose not to " take his course. Knowledge and skill are commodities which should be paid for just like any other commodity.

The foregoing solution is, I believe, in strict conformity with sound economics and the Principles of Ethics of the American Medical Association.

PROBLEM NO. 4 (GONORRHEA)

Instead of an individual and specific problem, we are presenting, this month, a general problem, regarding a widely-prevalent disease which has been treated, with more or less success, at one time or another, by almost every licensed physician; so we hope to have an active and extensive discussion of the questions, with a presentation of the methods of treatment which have been found successful in the hands of many clinicians.

Requirements

1.—Is gonorrhea worse in men or in women? Why?

2.—What is the best general treatment?

3.—What is the best local treatment?

4.—About how long does it take to cure a case of gonorrhea?

5.—How may the physician determine when such a case is cured?

DECENT CITIZENS IN POLITICS

The great majority of the fine, open-minded, honest products of our schools and colleges refuse to have anything to do with the political life of our country. They shun politics as if it were a plague. Decent people, they argue, will not walk with politics; she is a notorious lady, too easy to meet and too easy to compromise. Let her walk the streets, they say, while respectable citizens remain at home safe with their cloistered virtues, except for an occasional rendezvous. Far better it would be if these virtuous citizens would investigate and attack the conditions which have brought about the lady's plight. They would discover that the principal cause was their own political disinterest. If politics were courted by better men, she would have better standards. —DR. ROBERT G. SPROUL, Pres., Univ. of California.

EMERSON ON BIRTH CONTROL

If Government knew how, I should like to see it check, not multiply the population. When it reaches its true law of action, every man that is born will be hailed as essential.—RALPH WALDO EMERSON, from "Considerations by the Way."

THE · CLINIC

DIAGNOSIS

Roentgenologic Diagnosis in Obscure Clinical Conditions

By D. S. Beilin, M.D., Chicago, Ill.
Roentgenologist, Augustana Hospital

THERE are many pathologic entities that simulate each other at various stages of their course. Errors in diagnosis are not particularly due to lack of skill or experience, but because our knowledge is still insufficient. Wrong diagnoses are frequently due to too-superficial study of cases, and often the medical man is not entirely to blame. It is in the attempt to keep the cost of medical care at a minimum that errors creep in. At this particular point, may I emphasize that, in many instances, it is false economy, as a thorough study may obviate an unnecessary operation, or materially shorten the course of an illness.

There has been a tendency (more so by the younger men), to supplant the clinical examination by laboratory methods. This practice may often lead one nowhere, and occasionally results in error. The clinical examination should be of paramount importance, other diagnostic procedures being merely valuable adjuncts in diagnosis.

In this presentation I shall attempt to show the value of the x-ray examination in eliciting a diagnosis in some obscure conditions.

Case Reports

Case 1.—A male, aged 52, was sent to the roentgenologic department for diagnosis, with a past history which was not particularly remarkable.

Present Complaint: For the past year, the patient complained of slight dysphagia and slight hoarseness on and off for the past six months, becoming more marked at the time of the examination; temperature, 102°F. two weeks before the examination.

Laryngoscopic examination revealed that the vocal cords were pushed to the right side. Otherwise, the physical examination was negative.

X-ray Examination of the chest and neck: Fluoroscopic study and stereoscopic roentgenograms of the chest, taken in the postero-anterior view (Figure 1), and films taken in the lateral view of the larynx, pharynx, trachea and substernal regions, reveal a well defined supra-cardiac shadow, lying above the aortic shadow, which fluoroscopically rises on deglutition. There is a displacement of the trachea to the right. In the lateral view there is a shadow of homogeneous increase in density below the manubrium of the sternum. The lung fields otherwise are not remarkable.

Conclusions: Radiographically, the findings are those of a **substernal thyroid** which displaces the trachea considerably to the right. There is no involvement of the lungs. The substernal thyroid is the etiologic factor for the laryngeal involvement.

*Presented at Santa Barbara County Medical Society, Santa Barbara, California, December 8, 1930.

Fig. 1.—Arrows point to sub-sternal thyroid which displaces trachea to the right. (A) sub-sternal thyroid; (B) trachea.

Operation revealed a substernal thyroid which displaced the trachea considerably to the right. The thyroid was removed. Three weeks later the symptoms entirely disappeared.

Case 2.—A white female, aged 21, married, was admitted to the hospital March 13, 1930, with a *past history* of having had the usual diseases of childhood and pneumonia at the age of twelve. On December 15th, 1929, she had a normal delivery of a male child. No history of miscarriages.

Present Complaint: The patient has always been a small individual, never weighing over 100 pounds, and states that she has always been in good health until about eight months before the time of admission, at which time the cardinal symptoms were nervousness, loss of weight, a goitre of eight months' duration, a slight cough since December 29th, 1929, afternoon rise in temperature for two weeks, loss of appetite with vomiting, and moderate palpitation of the heart of six months' duration.

Physical Findings: The examination revealed a white female, small of stature and not acutely ill. The neck presented an enlarged thyroid, extending substernally and very firm. The superficial veins over the anterior cervical and upper thoracic regions were markedly dilated. There was a mass, apparently separated from the thyroid, about the size of a tangerine, at the supra-clavicular region. The thyroid did not move on deglutition. When the patient was in the recumbent position, she complained of severe tracheal pressure.

Examination of the chest revealed moist rales along the sternal region and over the right lower lobe. There was dullness beneath the entire sternum and the breath sounds were harsh. There were enlarged veins over the upper chest. The pulse was 96 and blood pressure 116/84. Abdomen and extremities were not remarkable.

X-ray Examination of the Chest: Fluoroscopic study and stereoscopic roentgenograms of the chest, taken in the postero-anterior (P.A.) (Figure 2), oblique and true lateral views, reveal a well defined, homogeneous, rectilinear shadow of increased density at the supra-cardiac region, overlying the aortic shadow and extending upward as far as the shadow of the clavicles. In the lateral view, the density was

Fig. 2.—Enlarged thymus, due to Hodgkin's disease.

at the anterior mediastinum, and in the oblique view, fluoroscopically, the rectilinear shadow of homogeneous increase in density was distinctly visible and did not rise on deglutition. The rest of the lung field was not remarkable.

Conclusions: Radiographically, the findings are those of an enlarged thymus. Findings of this character are consistent with a *malignant lymphoma*.

X-ray Therapy: On March 15th, 1930, short-wave x-ray therapy was instituted, in divided doses, over the upper anterior and upper posterior mid-chest regions. In total, the patient received a sub-erythema dose in divided sittings.

Roentgenogram taken on April 1st, 1930, showed a considerable degree of reduction

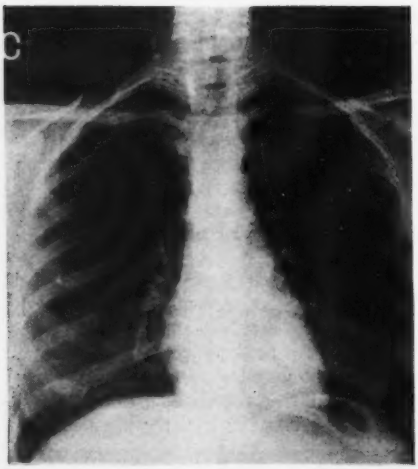


Fig. 3.—(Same case as Fig. 2). The shadow of the enlarged thymus has disappeared subsequent to x-ray therapy.

in size of the thymus shadow.

Roentgenogram taken on July 18th, 1930, showed that the thymus shadow was not visible and the supra-cardiac shadow was within normal limits.

Roentgenograms taken in the P.A. (Figure 3) and lateral (Figure 4) views, on November 7, 1930, revealed the supra-cardiac shadow was entirely absent and the lung fields were not remarkable. The posterior as well as the anterior mediastinum was distinctly clear.

A biopsy specimen was taken from the left supra-clavicular region and was diagnosed as typical **Hodgkin's disease.**

On November 7th, 1930, the patient had gained 22 pounds in weight (more than she ever weighed before) and had no complaints. October 28th, 1931, no recurrence of involvement had taken place.

This case illustrates the value of the roentgenologic examination in eliciting the underlying condition. The therapeutic result obtained by x-radiation also confirms the histologic and roentgen diagnosis.

Case 3.—A white female, aged 25, single, was sent in for x-ray examination of the chest on July 18th, 1930.

Past History: In 1927, the patient states that one evening, as she was leaving a theatre, she was seized with sharp, severe pain in the right chest and shoulder, with shortness of breath, and subsequently fell in the street. At that time she had an x-ray examination of the chest, which showed findings similar to those seen at the present time, only somewhat smaller in degree.

In the fall of 1929, an attempt at aspiration at the region of the mass revealed no fluid.

In the past three years she had had three attacks of pain in the right chest, with shortness of breath. At the time of examination, on July 18th, 1930, the patient complained of tenderness at the posterior ribs on the right side, particularly between the 7th and 8th, which had been present since 1927. There has been some restriction in respiratory movement and

Fig. 4.—(Same case as Fig. 3, in the lateral view). Note that the anterior and posterior mediastinum is clear.

several times during this year she has had attacks of pain in the right chest and upper scapula, which required morphine. She has no cough, no sputum, no night sweats, no fever and no loss in weight.

X-ray Examination of the Chest: Fluoroscopic study and roentgenograms taken in the P.A. (Figure 5) and lateral (Figure 6) views reveal that the left lung field is not remarkable.

On the right, at the posterior aspect of the lung field, at the inner one-half, there is a well-defined, circumscribed, pseudo-round shadow of homogeneous increase in density, which, in the P.A. view, extends from the 7th to the 9th ribs. In the lateral view, the anterior aspect of the shadow is round, smooth and well defined,and as it

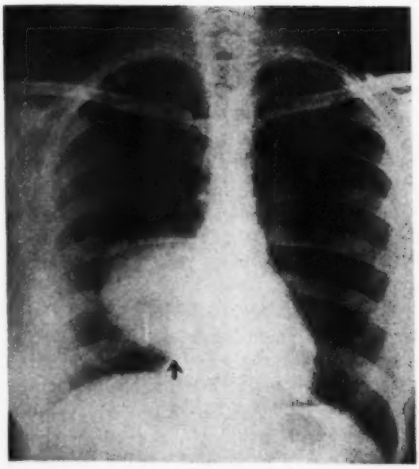


Fig. 5.—Arrows point to the endothelioma of the pleura.

extends posteriorly, it becomes rectilinear. There is no reaction of the lung about this shadow of density. There is no displacement of the heart nor mediastinal contents. The diaphragm is normal in position, outline and excursion, and the costophrenic angle is clear. The posterior ribs over this region show no evidence of destruction.

Fig. 6.—(Same case as Fig. 5, lateral view). The arrows point to the endothelioma, which arises from the posterior wall.

Conclusions: Radiographically, the findings are consistent with an *endothelioma of the pleura*, which is about the size of an orange. It would be advisable, in this case, to produce a diagnostic pneumothorax, in order to outline the tumor freely and to note its characteristics when the lung is moderately collapsed.

Several attempts at aspiration revealed a solid tumor mass.

Case 4.—A male, aged 44, was admitted to the hospital.

Present Complaint: The patient's trouble started last winter, at which time there was shortness of breath with coughing spells. In May, he complained of shortness of breath and 1500 cc. of fluid were aspirated from the right chest. He was taken to several clinics by his family physician, with no conclusive diagnosis.

X-ray Examination of the Chest: Roentgenograms reveal that, on the left, the lung field is not particularly remarkable (Figure 7).

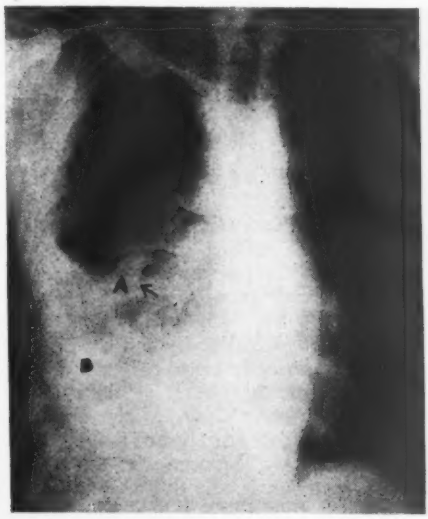


Fig. 7.—Arrows point to the area of consolidation. (A) primary carcinoma of bronchus; (B) fluid in pleural cavity.

On the right, the apex is homogeneously increased in density. The lower one-half of the lung field is characterized by a rather homogeneous shadow of increased density, which obscures the shadow of the diaphragm, the costophrenic angle and the lower right border of the heart. Between the shadows of the 8th and 9th ribs, posterior, at the mid portion of the lung field, is a well-defined, circumscribed shadow of homogeneous increase in density, which has the appearance of consolidation. The entire character of this density is obscured by the fluid in the pleural

Fig. 8.—(Same case as Fig. 7, subsequent to withdrawal of fluid from pleural cavity and introduction of air—diagnostic pneumothorax). Arrows point to the well-defined area of consolidation (carcinoma of the bronchus).

cavity. There is an irregular increase in density at the hilum.

A roentgenogram taken of the chest subsequent to the withdrawal of fluid and subsequent to the introduction of air into the right pleural space (Figure 8), reveals that the fluid has been entirely removed from the right pleural cavity and the pneumothorax is distinctly visualized, associated with a collapse of the lower lobe and almost a complete collapse of the middle lobe. The shadow of consolidation described previously, between the 8th and 9th ribs, posterior, is now distinctly visible, and is closer to the hilum because of the partial collapse of the middle lobe. The shape of the shadow of increased density has not changed.

Conclusions: Radiographically, the findings are those of a considerable amount of free fluid in the right pleural cavity, which has been completely aspirated, only a slight amount remaining at the region of the costophrenic angle, with consolidation at the region of the middle lobe, which maintains the same shape before and after collapse of the lobe. Findings of this character are consistent with a **primary carcinoma of the bronchus,** involving the middle lobe of the right lung.

Operation verified the tumor mass, and 15 radon seeds were inserted into and about the tumor mass. Roentgenograms taken four days later revealed that the shadow of consolidation was not so distinctly visible as when previously seen, as a result of the action of the radon.

The patient left the hospital with considerable improvement and died approximately six months later.

Case 5.—A male, aged 40, was sent to the x-ray department in shock, for an emergency examination of the genitourinary tract.

Present Complaint: The patient was working, loading plaster buckets, when he was struck, on the left back and side, by a plaster bucket which fell seven stories.

Physical Examination: Physical examination revealed a male in a semi-comatose state. The pupils were dilated; heart and

Fig. 9.—Arrows point to right kidney (A), which is normal in size and outline; to the shadow of the right psoas muscle (B), which is distinctly visualized; to the entire left area (C), from twelfth posterior rib to the crest of the ilium, which is homogeneous in density and obscures the shadow of the left kidney as well as the shadow of the psoas muscle. Findings of this character are those of hemorrhage resulting from either rupture of the left kidney or its pedicle. Note the fractures of the left transverse processes and posterior left ribs.

lungs were negative; there was a marked degree of tenderness over the posterior ribs on the left side and bulging of the left flank, with tenderness on palpation. The patient's condition was becoming progressively worse.

The clinical diagnosis on admission was fracture of the posterior ribs on the left

side, associated with a question of rupture of the kidney or spleen.

X-ray Examination: On December 9th, 1929, x-ray examination revealed fractures of the left transverse processes of the first, second, third and fourth lumbar vertebrae.

Stereoscopic films of the ribs revealed fractures of the eighth, ninth, tenth, eleventh and twelfth ribs on the left side, posteriorly. The fracture of the eleventh rib was comminuted and there was a downward displacement of the twelfth rib.

A film of the genito-urinary tract (Figure 9) revealed that, on the right, the kidney shadow was normal in size, position and outline. The psoas muscle was distinctly visible, and normal in density and outline.

On the left, the entire area, from the anatomic site of the twelfth rib, posterior, to the crest of the ilium was characterized by a homogeneous shadow of increased density, which obscured the shadow of the psoas muscle, as well as that of the kidney. Findings of this character are those of fluid.

Conclusions: Radiographically, the findings are those of a marked hemorrhage, resulting from a rupture of either the left kidney or its pedicle.

Operation: Operation on December 9, 1929, revealed that the left kidney was crushed and torn across on a jagged line, approximately at the junction of the upper and middle thirds. There was an aberrant artery at the upper pole.

A left nephrectomy was performed; 600 cc. of blood was transfused, and the patient made an uneventful recovery and was dismissed from the hospital on January 4, 1930.

Case 6.—A male, aged 44, was sent to the x-ray department with a past history of having been struck by a derrick, at the region of the lower right back, three weeks before.

Present Complaint: The patient stated that he had had pain in the right side since August 25, 1930.

Laboratory Examination: Specimens of urine have been clear and cloudy at intervals; no blood.

X-ray Examination: Films taken of the genito-urinary tract, with pyelographic study of the right kidney, on October 1, 1930, revealed that the right kidney was normal in size, position and outline. (Figure 10). There was no evidence of pyelitis

Fig. 10.—Arrows point to fine streamers arising from a middle calyx of the right kidney, which are due to a tear in the kidney substance.

nor hydronephrosis. There were several fine streamers, arising from the middle calyx, due to the iodide exuding into the parenchyma of the kidney.

Conclusions: Radiographically, the findings are consistent with a tear in the parenchyma of the right kidney at the site of the middle calyx.

Several weeks later the patient developed pyonephrosis, with hematuria, and on November 12, 1930, a right nephrectomy was performed. On sectioning the kidney there was a well-defined area in which the kidney substance was torn, at the site of the middle calyx, corresponding exactly to the site of the streamers shown in the roentgenograms.

Case 7.—A male, aged 51, was admitted to the hospital, with a past history which was not particularly remarkable.

Present Complaint: The patient states that two weeks before admittance he was awakened by a sharp pain in the back and right side, with vomiting, associated later with bloody urine. There was no hematuria at the time of admittance to the hospital.

Cystoscopic Examination was negative. Both ureters were catheterized without obstruction, and the orifices were normal.

Clinical Diagnosis: Pyelitis or calculus of the right kidney.

Fig. 11.—Arrows point to the right kidney, which reveals no opaque calculi.

X-ray Examination: A film of the genitourinary tract, taken on December 13, 1929, (Figure 11) revealed opaque radiographic catheters in both ureters. The kidney shadows were distinctly visible and were normal in size, position and outline. There was no evidence of opaque calculi in the genitourinary tract.

A roentgenogram of the genitourinary tract, taken subsequent to the instillation of sodium iodide into both ureters (Figure 12), revealed that, on the left, the pelvis of the kidney was normal in size, density and outline. The major and minor calices were normal.

On the right, the pelvis of the kidney was normal in size and outline. There was a well-defined, triangular shadow of diminished density, which occupied the shadow of the pelvis. The major and minor calices, however, were not remarkable.

Conclusions: Radiographically, the left kidney reveals no variation from the normal.

On the right, the findings are consistent with a large, translucent calculus in the pelvis of the right kidney.

Fig. 12.—Arrows point to the triangular shadow of diminished density in the pelvis of the right kidney following pyelogram.

A roentgenogram of the right genitourinary tract, taken with particular reference to the pelvis of the kidney, on December 16, 1929, (Figure 13), subsequent to the instillation of 20 cc. of air into the right catheter, reveals a large, well-defined, triangular shadow of increased density within the pelvis of the kidney. This shadow is distinctly visible and is identical in appearance with the shadow described with the pyelographic study. Radiographically, the findings are those of a *large, triangular stone* in the pelvis of the right kidney.

Fig. 13.—Arrows point to the well-defined triangular shadow of increased density after the injection of air into the pelvis of the right kidney.

Fig. 14.—Arrows point to the facial bones. Note that the fetal head is absent.

Post-Operative Report: A large triangular stone was removed frim the pelvis of the right kidney, the same size and shape as revealed in the roentgenograms.

Case 8.—A female, aged 36, was admitted to the hospital on November 6, 1929, with a past history of having had six normal deliveries.

Present Complaint: On account of the marked hydramnios, the patient was sent to the x-ray department for examination.

X-ray Examination: Roentgenograms of the pelvis and abdomen, taken in the antero-posterior (Figure 14) and lateral views, reveal the fetus well visualized. There is an absence of the fetal head, which is chiefly characterized by facial bones. The shoulders are relatively increased in size. The head is above the superior strait.

Conclusions: Radiographically, the findings are those of the fetal monstrosity, anencephalus, associated with hydramnios. Findings of this character are often associated with spina bifida and meningocele.

On the following day the patient was delivered by version and extraction. The fetus was a monster, with anencephalus, spina bifida with a large meningocele, which was attached to the back.

Case 9.—A male, aged 46, was admitted to the hospital with a past history of having had "inflammation of the bowels" in 1912.

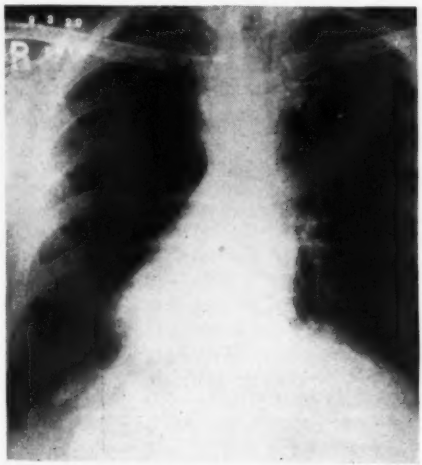


Fig. 15.—Note that the heart is in the right chest (dextrocardia).

Fig. 16.—The arrows point to the shadow of the gall-bladder, which is in the left upper quadrant. Note the shadows of diminished density in the gall-bladder shadow at A, which are translucent calculi.

Present Complaint: The patient states that four and one-half years ago he developed an acute pain in the epigastrium, and when severe the pain was diffused over the entire abdomen. Occasionally, the pain was referred to the upper left quadrant. Three weeks before the time of admission, the pain reappeared at the left upper quadrant, but more severe in character and lasting longer. The last attack was associated with vomiting and slight fever.

Physical Examination: Physical examination was not remarkable, with the exception that the heart was in the right

(Continued on page 310)

CLINICAL · NOTES AND PRACTICAL · SUGGESTIONS

Tuberculous Intoxication in Epilepsy and Neurasthenia

"MEDICINE has made enormous strides during the past generation, but would have gone much farther if physicians in general were endowed with a greater degree of scientific curiosity and imagination and could be prodded out of the sluggish backwater of reactionary conservatism and professional lethargy, in which too many of them have been stagnating for years, and made to take an enthusiastic interest in the bringing of the discoveries of the researchers to bear upon the relief of human pain and the cure of man's diseases." (CLINICAL MEDICINE AND SURGERY, Dec., 1930, p. 876).

The above quotation from a recent number of this journal serves as a fitting introduction to this article.

Somewhat over a year ago, my attention was caught by a paper on the tuberculous origin of neurasthenia, by Dr. Joseph Hollos, of New York, published in this journal. Becoming interested in what I had read, I obtained his book on "Tuberculous Intoxications." In it there is a chapter on epilepsy, which I read with a special interest, since it struck me as an original contribution to the fascinating study of this disease, by introducing the subject of tuberculosis (or, rather, the toxins of the tubercle bacilli) as a factor in the pathogenesis of epilepsy. Though the number of cases reported by him was small (six), they were reported with such candor that a vivid impression of honesty and real scientific investigation was given on their perusal.

It was Gowers, I believe, who first specified the toxins of infectious diseases, especially that of scarlet fever, as being important in the pathogenesis of epilepsy. Many clinicians have specified the importance of measles and whooping cough in the etiology of this malady. May not the toxins of the tubercle bacillus act similarly?

In incipient epilepsy there is demonstrable a moderately diseased condition of the sympathetic neurons and, when the malady has progressed into chronic grand mal, the manifestations of diseased sympathetic neurons are more widespread and more intense, as shown by the wellnigh unconquerable hypertonia of sympathetic neurons found present in the chronic condition. These statements are not at all theoretic notions, but are based upon the observation of the physical, objective signs of the disease, which can be observed by anyone, and which are often so characteristic as to permit of the accurate diagnosis of the malady between the seizures (See "Basis of Epilepsy," published by R. G. Badger, Boston). Epilepsy can, therefore, be defined as a *progressive disease of the sympathetic neurons.*

The essential cause of the disease is found to be a hypertonia of the sympathetic neurons, for in the incipient cases correctly treated, the hypertonia is conquerable and the symptoms disappear with the hypertonia. The question naturally occurs, how is this primary hypertonia produced? Fright can produce a true hypertonia of the sympathetic neurons (established by the physiologist, Cannon), and fright is not rare in the etiology of the seizures. There is strong probability that the toxins of the infectious diseases are causative, in most cases, of the sympathetic hypertonia with which epilepsy begins, for, of 145 cases

of epilepsy examined in the Boston public schools, 140 of them had one, two or three of these diseases in their previous histories. This fact is from the "Report on Survey of Epilepsy in the Boston Public Schools, with Analysis of 145 Cases", recently read at the meeting of the American Association of School Physicians in Montreal, Can., (September 14 to 17, 1931.)

The interesting question arises as to what relation the tuberculous infection that permeates the general population (as shown by general autopsies and tuberculin tests) may have on the production of the sympathetic hypertonia which is the essential factor in epilepsy? The determination of this question will require considerable time, but we ought not begrudge the time, since it furthers our knowledge of the disease.

Another chapter in Dr. Hollos' book, that on neurasthenia, likewise engaged my attention; and the success which followed the treatment of some cases with the "immune blood" which he described is the basis of the high regard I have for the scientific character of Dr. Hollos' contribution to medicine. One of these cases I report here in brief:

Miss G., aged 35 years, stenographer, for several months had not been able to concentrate upon her work; she suffered from various aches and was worried by the fear that she would have to give up her position because of poor health. A month previous to her visit she suffered what her physician had diagnosed as an attack of appendicitis, which subsided after rest in bed and the administration of some remedies.

The history she gave brought to mind similar cases described by Dr. Hollos. Inspection showed an old tuberculous scar on her neck, I thought the case was probably one of tuberculous intoxication and prescribed a course of "immune blood" treatment, by means of her rubbing into the forearm five drops of the dilute "immune blood" once daily. The treatment was begun with Dilution VI and continued until she had finished with the Dilution III. She quickly showed improvement, and in six months was in excellent health. Since the treatment is specific for tubercle bacilli, this result confirms the diagnosis.

The chief object of this brief article is to bring Dr. Hollos' work to the attention of the general practitioner. The opportunities for testing the value of Dr. Hollos' clinical research are many; his book is well fitted to "prod the general practitioner out of the sluggish backwater of reactionary conservatism and professional lethargy", in which many have been stagnating. perhaps for lack of such leadership.

EDWARD A. TRACY, M.D.

Boston, Mass.

Study the Irregulars

NO *SYSTEM* or idea lives on indefinitely unless there is some germ of merit in it, somewhere.

If the researchers in the colleges would *study* osteopathy, chiropractic, sanatology, naprapathy, etc., with open and unbiased minds and without emotional complexes, as they would study any other scientific problem, and make a sound and valid statement of just exactly what they *are* and *are not*, such a report would go much farther in clarifying the situation than all the ignorant vilification in the world.

DIETRICH KLEMPTNER, M.D.

Chicago, Ill.

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[The medical profession has been subjected to enough mudslinging, by wholly uninformed persons, so that we ought to appreciate Dr. Klemptner's attitude.

If the twilight zones of medical practice are as far off the track as most of us believe they are, an impartial investigation and report would give us ammunition for cool instruction of our patients. Slurs and hard words suggest "sour grapes." If they have something worth while, it ought to be taught in our colleges.—ED.]

Send for your copy of "What About Heart Diseases." Educate your patients.

Birth Control in Tuberculosis and Other Serious Disease

IN my life-long work for the prevention and cure of tuberculosis, I have seen many a woman afflicted with this disease who became pregnant and whose lung condition was seriously aggravated thereby, causing premature death. These experiences caused me to become an ardent advocate of scientific, judicious and ethical birth control. Had timely and careful prevention of conception been instituted, those mothers might have lived many more years, because uncomplicated tuberculosis is curable, in most instances.

The tuberculosis germ is everywhere, and only when we are strong and healthy does it fail to do us any harm; but too frequently repeated pregnancies, even in strong women, will undermine the system and make it less resistant. To prevent tuberculosis, every married woman should

have an annual health examination and at least a two-years' interval to recover from one pregnancy before beginning another.

When there are already too many children and the husband's earnings are small, the result is underfeeding, overcrowding and often insufficient clothing in cold weather. These three causes undermine the system, so that the germ of tuberculosis will get an easy hold. Large families are often compelled to have their children help to add to the family budget. If there is anything which predisposes young people between 15 and 20 to tuberculosis, it is present when their growth and general development have been stunted by child labor. Because of the enfeebled condition of the mother and the additional inevitable underfeeding, these are the children who so frequently become victims to tuberculosis.

Everybody knows that sun, good air and food are helpful in the prevention and cure of tuberculosis. It must be evident how little of these can be had in an overcrowded tenement house, with six to ten people living in two or three rooms. Underfeeding and overcrowding are responsible for many cases of tuberculosis.

If the tuberculous wife becomes pregnant, her own life and that of her child are seriously jeopardized. Such catastrophies can be avoided by the proper and timely application of contraceptives. Prevention of conception in tuberculous or strongly predisposed women is one of the important factors in the reduction of the tuberculosis mortality rate. How much greater would this reduction be if birth control would become more universal; if all physicians were properly educated in the prevention of conception; and if all women could know that, by applying to their physicians or birth control clinics for advice, their lives, if in danger, would be spared.

It is not only tuberculosis which becomes aggravated by an added pregnancy. Many other ailments, such as kidney, heart, nervous and mental diseases, often cause an untimely death of mothers whose lives could have been preserved if proper contraceptive methods had been instituted in time. One condition which often leads to serious mental trouble is the socalled anxiety neurosis—the woman's constant fear of becoming pregnant when her physical or economic condition will not permit any addition to the family. When pregnancy does occur, these women, in desperation, often resort to abortion, which frequently leads to chronic invalidism or death. These criminal abortions are largely responsible for our country's fearful maternal mortality rate. One would think that the whole American medical profession would be aroused to prevent such conditions!

While there are now quite a number of states where physicians may give contraceptive advice, there are strict Federal laws which make interstate exchange of medical information or the importation of scientific literature or articles helpful in saving women's lives impossible. Five years in a Federal prison or a $5,000 fine or both await the violator of this inhuman law.

What misery and suffering would be spared to women and children if all laws against birth control would be annulled and its practice, under medical supervision, considered a public utility, as it is in Holland, and not a public menace, as misguided persons maintain!

If one wants to get an idea of what women suffer because of these man-made laws, one should read "My Fight for Birth Control," by that heroic woman, Margaret Sanger, who, in her battle for the rights and freedom of womanhood, suffered humiliation, imprisonment, privations of all kinds and the most brutal treatment, in the name of the law. Let us all help her in her present endeavor to have these unjust federal anti-birth-control laws repealed. If we followed the example of Holland, where birth control has been officially sanctioned for over fifty years, fewer mothers would die from tuberculosis and other diseases, leaving orphaned children. Young people who now hesitate to marry, for fear of too large families, would not do so if they knew that they could space the arrival of children according to their economic condition. There would be fewer marital maladjustments, fewer divorces, less illegitimacy, prostitution and syphilis, and crime would diminish. If morons, the hopelessly insane and idiotic could be prevented from procreating by sterilization (which is a safe and not a mutiliating operation), our asylums would be less overcrowded, our taxes would be lower and the general health of the nation would be better. There would be a de-

cided physical, material, moral and even spiritual progress. Let us also think of future generations and prevent overpopulation, with all its dire consequences of disease, crime, war and famine.

In the little land of Holland there is a gradual increase of population, although birth control is legalized. There quality counts more than quantity. There is a better economic and physical wellbeing of the people at large. The men called to military duty are two inches taller than they were 50 years ago. There is no unemployment and the maternal and general mortality rates are the lowest of all civilized countries. Let us do likewise and become also a model for other nations.

S. ADOLPHUS KNOPF, M.D.
New York City.

Charity*

MANY of our noblest men are connected with hospitals, dispensaries and other institutions. These places are highly necessary, do a world of good, and are here to stay. The sins of those who use them for selfish ends should be fought vigorously and steadily. The imposter patients of dispensaries and college clinics should be attacked systematically and thoroughly. The stingy and miserly, able-to-pay, are thieves who steal our service and income from our families, and independence in old age; they should be prosecuted and denied clemency when detected.

If every charity patient had to show evidence or proof of inability to pay for medical service, the burdens of charity inflicted on the physician would be lightened considerably.

In these times of stress, almost everybody is looking for a handout. In fact, they demand assistance from those who are willing to give. Many of our chronic charity charges are keeping their gold for a rainy day. They are enjoying some of the luxuries of life and getting charity for the necessities; not only medical assistance but food and clothing are accepted, because their money may not last through the depression. Candy and cigarettes are purchased with food tickets. Gasoline is bought with milk tickets. Medicines are accepted from big-hearted druggists and physicians by poor people whose Packard car waits at the curb. Santa Claus is asked to please bring a new auto battery so that the car can be used to make the trip to the dispensary in comfort.

When will some people awaken to the fact that the only true charity is that of neighborliness and good-will toward all?

A. H. HALLMAN, M.D.
Chicago, Ill.

*Adapted from *Northwest Medical*, Jan., 1932.

Educate your patients. Your copy of "What About Heart Disease?" is ready now.

Agranulocytosis
(A Case Report)

MRS. M. L., age 63, housewife, was ill for two or three days with chills, fever and malaise, thought to be due to influenza. She then felt well for two days, when a return of her former symptoms, with the addition of headache, acute bronchitis and coryza, occurred. About the seventh day from onset, diarrhea appeared, with the passing of fifteen or twenty bloody stools a day. At the same time a scattered eruption was noted over the hips and upper back, consisting of reddish, deep-seated nodules, similar to those seen in erythema nodosum. About the tenth day jaundice was first observed. This rapidly increased until, at the time of death, it was of maximum intensity. About the same time the patient first complained of sore mouth and throat.

On entering the hospital March 1, 1931, eleven days after the onset, the patient was stuporous; the temperature was 104°F.; pulse 120; respiration 36 per minute. *Physical examination* showed intense jaundice, a marked gingivitis, with gums which bled readily at the slightest touch, and a diffuse redness of the throat, but no ulcerations. The skin showed scattered, indurated reddish nodules on the hips and back, about two centimeters in diameter and surrounded by an erythematous area about two centimeters wide. Purpuric spots were present on the forehead and about the eyelids and face. No enlargement of regional lymph nodes, spleen or liver was noted. A *blood examination* at this time showed 3,420,000 red blood cells; hemoglobin 60 percent; total white cell count, 500. Only five white cells could be found on the smear, all lymphocytes. A count the next day

showed about 600 white cells; and on March 4, 1931, just before death, 300 white cells. A transfusion of 500 cc. of citrated blood, and also x-ray therapy over the long bones, were given without effect.

Comment

A comprehensive definition of agranulocytosis is found in the article and case report of Roberts and Kracke[1], which I can do no better than quote:

"A disease entity of unknown cause, whose onset is sudden, with mental and physical collapse, which is preceded by cellular change and functional paralysis in the myelocytic division of the bone marrow, by the physiologic disappearance of these granulocytes from the blood stream and the whole followed by a relative loss of immunity, easy invasion of bacteria and resulting sepsis."

The disease is more common in females than in males and must be differentiated from the whole group of diseases showing decreased granulocytes but resulting from known causes.

A typical case of agranulocytosis runs a short course of a week or ten days to a fatal termination. Instances of recovery temporarily[1], and of a second or third attack are on record. Undoubtedly, slight unrecognized cases occur.

The *symptoms* are those of an acute fulminating infection, with septic temperature, malaise and prostration. Gingivitis or pharyngitis is a distinctive feature. There is some disagreement as to other features of the disease. One author[2] states that the liver and lymph nodes are not affected, but that jaundice may occur in some cases. Another[3], declares that the regional lymph nodes, liver and spleen may be enlarged; and that jaundice is common, but that there is no bleeding nor purpura. All of these features may be present, according to records in reported cases.

The outstanding characteristics of this case, worthy of recording, are the intense jaundice, the purpuric spots on the face, the skin manifestations (which very much resembled the nodes seen in erythema nodosum), and the marked gastrointestinal symptoms.

Roberts and Kracke[1] report multiple subcutaneous abscesses and skin lesions in their case. The nodes seen here are undoubtedly of embolic origin. No abscesses developed.

Purpura occurred in this patient, indicating a disturbance of the platelet-forming mechanism, in addition to paralysis of the section of bone marrow forming granulocytes. The gastrointestinal symptoms could have been a part of the purpuric picture, such as that seen in the abdominal crises of Henoch's purpura, or might have been due to septic emboli in the intestinal walls.

H. P. Miller, M.D.

Rock Island, Ill.

1.—Roberts, Stewart R. and Kracke, Roy R.: Agranulocytosis. *J.A.M.A.* 95:780, Sept. 13, 1930.
2.—Osler, William: "Principles and Practice of Medicine," 10th edition; New York: D. Appleton & Co.; p. 462.
3.—Clough, Paul W.: "Diseases of the Blood" (Harper's Medical Monographs); New York: Harper & Bros.; p. 218.

Tracing "Skips"

"SKIPS," socalled by credit men, are those people who run up a lot of debts and then go away, leaving nothing behind but the unpaid bills and their names over the doorbell. Up to now, it has been impossible to trace them except by trickery (such as sending a vague notice having to do with a will, or a "package awaiting shipment," or anything which induces the debtor to show himself). Postmasters have not been permitted to divulge a forwarding address.

Congress has improved this situation by a recent act, authorizing the Post Office department to trace a "skip" for a fee of 23 cents.

The procedure allowed by the act is simple. Send a registered letter to the last known address of the debtor, marking the envelope "Return receipt requested showing address where delivered." If the letter reaches its destination (and it usually does), the post office department mails a receipt back to the sender—and there is the new address! — *Medical Economics*, February, 1932.

Plastic Induration of the Penis
(A Case Report)

THE patient was a healthy looking man, 55 years old, with the complaint that, on erection, the penis turned upward toward his abdomen and interfered with coitus.

Up to August, 1930, he had no disturbance in his sexual life. At that time he consulted a physician for some itching and redness of the meatus, and was informed that he had a stricture. At the physician's

direction he purchased graduated sounds and began passing them once daily.

About a week after beginning the use of the sounds he noticed that the penis had an upward curve when erect, and this has persisted since that time. He discontinued the passing of sounds after three months.

In order to perform coitus the penis has to be forcibly bent downward. Ejaculation is not interfered with The longer the erection lasts, the more pronounced the curvature becomes, so that if erected for a half-hour, coitus is impossible, as the penis is up against the abdominal wall.

Examination showed a smooth, cartilaginous placque, about the size of a nickel (coin), on the dorsal surface of the penis near the root. This fibrosis is not attached to the skin, and ordinarily would not be found unless looked for.

The condition has been variously termed fibrous cavernositis, circumscribed fibrosis, induration of the corpora cavernosa, plastic induration of the penis, sclerosis of the corpora cavernosa, etc. A comparatively rare disease, it was first described by La Peyronie in 1743.

The cause is unknown, but most of the cases recorded appear to be a primary fibrosis of the sheath of the corpora cavernosa. The prognosis is bad, there being no satisfactory treatment.

R. S. Mac Arthur, M.D.
Los Angeles, Cal.

—

[Dr. McArthur seems to have a positive genius for discovering the errors of medical men and reporting them without caustic comment.

The folly of a physician who would direct a patient to pass urethral sounds upon himself is almost beyond belief. This may not, of course, have caused the condition from which the patient now suffers, but it could scarcely fail to result in some form of disaster.—Ed.]

Advertising

PUBLICITY sells service, as well as goods. Without publicity the American nation would still be where it was in the frontier days. California, Florida, Cuba and Bermuda are sold to the public by those interested in themselves. The shop keeper who advertises soon forces his more conservative neighbor into other fields.

The people want to know before they go. If somebody tells them, directly or indirectly, that quality can be had at the right price, they will get it. Keeping your product before the public, if it is good, it will soon sell itself, but the public must be reminded, not occasionally, but *frequently*. Business methods and business principles are as honest today as they ever were, but business methods have changed—the practice of medicine has changed. Why do we still adhere to the old? Are we afraid to leap?

Close cooperation between medical men and medical institutions, with special consideration for the general practitioner, can do much to relieve the tension which now exists. The rank and file of medical men, the men who carry the brunt of the conflict, are tired of being the fall guy and want some compensation for themselves.

I do not wish to leave the impression that the individual doctor should advertise—not by any means. Doctors as a group or society can advertise and *should* advertise that good service can be had—quality service at moderate cost and commensurate with the type and extent of service needed—good, clean, high-class advertising with dignity, and outstandingly fitting to a high-class profession—not mudslinging or bragging, but clean, informative notices to the public. Not medical education, but medical consciousness should be the object of the publicity—news items controlled by a physicians' bureau, rather than the set-up ads that are commonly used.—Adapted from *Northwest Medical*, Feb., 1932.

Facts and Fallacies About Cross-Eyes

Facts

1.—A cross-eye is a serious functional disorder which should not be neglected.

2.—The sooner cross-eye is treated, the more certainly it will be cured.

3.—The majority of cases of cross-eye can be easily cured if treated *very early* and *very definitely*.

4.—A cross-eye is often very difficult and may become impossible to cure, if neglected or if improperly treated.

5.—To neglect a cross-eye usually causes the loss of the vision of that eye.

6.—If proper glasses do not cure crossed-eyes in a few months, they will never cure them.

7.—If glasses and the proper treatment

do not relieve the cross-eye in six months, the patient should be operated upon, no matter what the age.

8.—A cross-eye makes the child timid and shy, and creates an inferiority complex.

9.—Every cross-eyed child in school in a neglected child.

10.—Above seventy-five percent of cross-eyes are cured when treated very early; few or none are really cured when treated late.

11.—To treat a cross-eye too late means only a cosmetic result.

12.—Cross-eye is a distinct economic handicap.

Fallacies About Cross-Eye

1.—That cross-eye is a simple thing which the child will outgrow. (It is not.)

2.—That the operation to cure cross-eye is the small matter of "Snipping a little muscle." (It is by no means a simple procedure.)

3.—That operations for the cure of cross-eye cannot be performed until the patient has reached the age of fourteen. (When operation is necessary, the sooner it is done the better.)

4.—That the repeated change of glasses will cure nearly every case. (It will not.)

5.—That cross-eyed does the child no harm (It does. It usually causes the loss of vision of that eye and produces a hideous deformity which causes the child to develop an inferiority complex and is a distinct economic handicap.)

How to Cure Cross-Eye

1.—Educate the parents—

A.—Not to neglect the child.

B.—If palliative treatment does not relieve in a few months, insist on operation.

2.—Educate the general practitioner and pediatrician—

A.—That it means the loss of the vision of an eye to put off treatments.

B.—That *early treatment* offers the only hope for functional cure.

3.—Educate the oculist—

A.—To treat cross-eye *early* and *definitely*.

B.—To operate early and accurately.

C.—Adopt methodical examinations.

D.—Adopt very accurate measurements.

E.—Keep full and accurate records.

F.—Straighten every child's eyes before it is five years old; the sooner, the better the functional results.

Oscar Wilkinson, M.D.
Washington, D. C.

(Continued from page 303)

chest. There was also a slight rigidity over the left hypochondrium.

X-ray Examination: A roentgenogram of the chest (Figure 15) revealed *dextrocardia*, and roentgenologic study of the gastrointestinal tract showed complete *transposition of the viscera*. There was no evidence of organic disease of the stomach, duodenum or colon.

Roentgenologic examination of the gall-bladder, by the Graham method, revealed the liver in the left upper quadrant. There was no evidence of opaque calculi. A film of the gall-bladder, taken subsequent to the oral administration of the dye, revealed that the shadow was distinctly visible (Figure 16) and showed several shadows of diminished density within the gall-bladder shadow. There was some failure in concentration function. The emptying function was normal.

Conclusions: Radiographically, the findings are those of *cholelithiasis*, associated with *cholecystic disease*. The gall-bladder is located at the left upper quadrant, as a result of the complete transposition of the viscera.

Operation: Operation revealed a complete transposition of the viscera. The stomach, pylorus and duodenum were normal. The gall-bladder was removed. It was considerably thickened and contained a number of large, translucent calculi. The patient made an uneventful recovery.

Man A Speck

The atom is as porous as the solar system. If we eliminated all the unfilled space in a man's body and collected his protons and electrons into one mass, the man would be reduced to a speck just visible with a magnifying glass.—Arthur Stanley Eddington.

THE · LEISURE · HOUR

To do without thought of winning or achieving; to serve without consideration of gratitude or recognition; to assist rather than to overreach or fail in confidence; to take the full burden of responsibility and discharge the last iota of personal and social obligation, rather than negotiate the maximum of economic supremacy; to accept the task and opportunity of the day and ask only strength and skill to do it well; to complain of nothing; to be a constant lover and a steadfast friend; to hate the sordid and the evil without bitterness toward the evil doer; to meet the inexorable with fortitude and accept the ministry of loneliness, silence and regret with patient determination; to live openly and self-containedly a life of moderation—let this and these things be my daily aspiration.—Dr. Bayard Holmes.

No Wonder We're Nervous

American nervousness is of the grandiose variety. There is no reason to believe that the American race was born nervous. But when it suddenly found itself in a country that had previously produced nothing but corn and Indians, where the temperature jumps ten degrees up or down in the course of an hour, and where Saharan summers are followed by Lapland winters, it needed nerves, and strong ones, if it were not to succumb to an environment that had already decimated so many Indian races. To build a continent in 200 years takes an active nervous system.

The Americans, therefore, equipped themselves with nerves, and they still have them. No one who has heard a Swedish inhabitant of Los Angeles playing on a Hawaiian guitar will argue that Americans haven't strong nerves. The United States is the psychiatrist's paradise. The most popular American disease is the nervous breakdown. Bankers, actresses, stenographers, preachers, politicians and trolley car motormen like nothing better.

In a country where the heavens are so bright and hard, where the air is so overcharged with electricity, something has to crack. "Come, O ye prayed-for storms!" cried Chateaubriand, and straightway departed for America. When life becomes too disagreeable, too complicated, too monotonous, Americans pray with one voice for a storm. The storm arrives forthwith, in the form of a cyclone, a war, or a diplomatic incident, and three weeks or months or years of pent-up nervousness is suddenly released. When the storm is over, it leaves behind it a group of Anglo-Saxons, playing golf.

—BERNARD FAY, in *Le Figaro*, Paris.

Velly Often Bawls

It was the first time a Chinese boy had seen a piano, and he tried to describe it to a friend in pidgin English. "This fella' box," he said, "you fight him in teeth, He cry."—*Exchange.*

Uncle Billy Hack says his new tonic is no good; all the directions it gives are for adults and Uncle Billy says he's never had 'em.—*The Farm Journal.*

The Important Comma

A pupil was having trouble with punctuation and was being called down by the teacher.

"Never mind, son," said a school visitor, "Commas don't amount to much, anyway."

"Don't they?" replied the teacher, turning to the President. Then she directed the boy to write on the board this sentence: "The president of the board says the teacher is a fool."

"Now," she continued, "put a comma after 'board' and another after 'teacher.'" —*Phoenix Flame.*

Chemistry Prof.: "Name three articles containing starch."

Student: "Two cuffs and a collar."—*Phoenix Flame.*

Some Man!

Fifty-five years Dr. Jancky practised medicine, being responsible for most of the babies born in the community.—Pomeroy (O.) *Democrat.*

Careless

Due to an error, Mr. and Mrs E. E. Ankrum, 104 West Healy St., are the parents of a girl born Thursday morning in the Mercy Hospital.—Champaign (Ill.) *Gazette.*

Drat the luck! Now that a dollar is worth $1.25, the man without a dollar is two bits worse than broke.—*Fountain Inn (S. C.) Tribune.*

Removing the teeth will cure some things, including the foolish belief that removing the teeth will cure everything.—*Peoria Star.*

The Chances

Cheer up! You have two chances: you may get the germ or you may not. And if you get the germ, you have two chances: you may get the disease or you may not. And if you get the disease you have two chances: you may die or you may not. And if you die, well, you still have two chances.—Patchwork.

DIAGNOSTIC · POINTERS

Chronic Running Ear

When a patient with purulent otitis media begins to show a progressive lowering of function in the vertical semicircular canals on the affected side, with good responses from the horizontal canal, it is high time that something more active than watchful waiting be done. Likewise, when it is found that the vertical semicircular canals on the diseased side do not respond at the first examination, while the horizontal canal function and both sets on the opposite side are normal in reaction, there is obviously no excuse for resorting to the various methods of conservative treatment, since the individual is already on the road to brain abscess or meningitis. Not infrequently the vestibular examination will bring out the fact that an otorrhea of comparatively short duration is already complicated by severe intracranial involvement, when it may not be suspected from the ordinary clinical and x-ray examination.—Dr. L. W. Oaks and H. G. Merrill, Provo, Utah, in *Eye, Ear, Nose and Throat Monthly*, Nov., 1930.

Sciatic Pain

No case of sciatic pain has been completely investigated until, in addition to the routine pelvic and rectal examinations, the lumbo-sacral spine has been x-rayed.—Dr. W. R. Brain, in *Practitioner*, Lond., Dec., 1930.

Migrating Colon

In *Radiology*, July, 1931, Dr. C. E. Piersall, of Reno, describes a case of migrating colon in a man aged 53, discovered on roentgenologic examination. Test meals showed that the colon entirely changed its position from time to time, with relation to the midline.

The personal history of this man suggested that the attachment of the hepatic flexure may have been loosened by trauma, there having been three occasions during his life when he suffered a severe abdominal injury; but a congenital anomaly may account for the hypermobility.

Migraine

The etiology of migraine lies deep-seated in the germ-plasm; it is an hereditary, constitutional disease and it seems to be associated closely with a dysfunction of the endocrine glands.—Dr. N. C. Stevens, in *New England J. Med.*, Oct. 24, 1929.

Early Diagnosis of Neoplasms of the Digestive Tract

There is no test, no laboratory technical method, that is so valuable in diagnosing gastrointestinal neoplasms as a careful analysis of the history of the case, discarding no symptom because it may seem insignificant. It is upon the art, not the science of medicine that we must lean. With this as our foundation, we can make a surprising number of relatively early diagnoses, if we utilize all the other means at our command.—Dr. T. R. Brown, of Baltimore, in *Ann. Intern. Med.*, July, 1931.

Nonrachitic Bone Defects

The widespread attention that has been given, in recent years, to rickets has caused many nonrachitic conditions to be loosely diagnosed as coming under this heading, such as fragilitas ossium, chondrodystrophy, osteitis fibrosa and other pathologic bone conditions. Attention has been directed to a peculiar nonrachitic softening of the ribs that may result in the sinking or flattening of the walls of the chest, in children, and may persist to adult age. A pronounced flattening of the occiput is often noted,

with bowing of the legs and other bone defects.

The foregoing symptoms occur without roentgenographic abnormalities of a rachitic character; the calcium-phosphorus levels and ratios in the blood may be normal. Antirachitic treatment does not effect a cure in such cases, nor does diet alleviate the condition. Many such cases are congenital and of the nature of an osteoporosis. — Editorial, *J.A.M.A.*, Aug. 29, 1931.

Diagnosis of Congenital Syphilis

Many cases of congenital syphilis give negative Wassermann or other blood tests. The presence of scaphoid scapula, with palpable cervical glands and pulmonary findings pointing to a consolidation of the tissues under the lower posterior aspects of the right lung, give a triad as diagnostic of congenital syphillis as is a 4-plus Wassermann reaction.—Dr. Ferd. Herb, in *M. J. & Record*, July 16, 1930.

Allergic Enterospasm

Spasm of the colon—enterospasm—may be due to food allergy. The condition is somewhat akin to that of the production of allergic spasmodic asthma. As a general rule, patients who suffer from allergic enterospasm will show a positive skin test to the food proteins which cause the enterospasm, and the symptoms of the latter will disappear on withdrawal of these foods from the dietary.—Dr. A. A. Bisset, in *Practitioner* (Lond.), Nov., 1930.

The Pulse in Abdominal Injuries

In cases of abdominal injury, the pulse is the best guide to the seriousness of the results, an increase indicating a tear of some viscus. — Dr. Leroy P. Kuhn, in *Bul. Chicago M. S.*, Jan. 17, 1931.

Abdominal Masses in Infants

Fifty percent of solid abdominal masses, occurring in infants, are kidney tumors of one kind or another, and their treatment must be based upon the detailed findings.—Dr. Wm. E. Lower, Cleveland, O.

Tests of Liver Function

Tests of liver function are of value to the surgeon in two ways: (1) By revealing hepatic disease they serve to establish or confirm a diagnosis; or (2) they warn of operative or postoperative complications.

There is, at present no single test that gives an adequate index to the operative risk in all groups of cases. A consideration of our present knowledge of the physiologic activities of the liver indicates the difficulty in seeking for such a test.—Dr. C. H. Greene and associates of the Mayo Clinic, in *J. Lab. & Clin. Med.*, May, 1931.

Habit Problems of Children

By the very simple expedient of selecting a single category of behavior, watching it for a constant time in a group of children, making a record, and repeating the observations, it becomes possible to actually get measured data which will differentiate children with respect to any habit. — Dr. W. C. Olson, of Ann Arbor, Mich. in *J. Michigan St. M. S.*, June, 1931.

Diagnosing Kidney Trouble

It has been my experience that major kidney diseases are accompained by pain referred to remote parts and simulate diseases of other organs, particularly the abdominal viscera, more often than to the socalled kidney area in the lumbar region. Conversely, diseases in other organs do cause pain which is referred to areas ordinarily interpreted as indicating lesions of the urinary organs.—Dr. W. F. Martin, in *Bull. Battle Creek Sanit.*, Apr., 1931.

Rupture of Gastric Ulcer

Experiments on animals have demonstrated conclusively that no ordinary degree of trauma to the abdomen will cause perforation of a gastric ulcer, no matter how thin the stomach wall may be at that point. Such an ulcer is just as likely to perforate when the patient is in bed as when he is at work, no matter what his work may be. —Dr. John A. Wolfer, in *Bul. Chicago M. S.*, Jan. 17, 1931.

Current · Medical · Literature

Etiology of Dental Caries

From a study of dental caries during the past 15 years, Drs. A. F. Hess and H. Abramson, of New York City, report, in *Dent. Cosmos*, Sept., 1931, that two groups of children who had been closely observed during infancy (some six or seven years ago) were recently examined for the presence of dental caries. The one group was known to have been free from rickets, as judged by repeated clinical and roentgenographic examinations; the other group had rickets in mild or moderate form during the first year of life.

It was found that the children who had been protected from rickets had developed less caries than those who had not been protected. Nevertheless, numerous instances of dental caries were found in the non-rachitic group. The deciduous teeth as well as the first molars were involved. Considerable caries was likewise observed in the teeth of a group of children who had been breast-fed and had shown no evidence of rickets in a study carried out in 1922 and 1924. An average degree of caries was found in the teeth of children whose mothers were given cod-liver oil during the latter months of pregnancy; this group likewise had been studied for rickets about seven years ago.

A consideration of the geographic distribution of dental caries brought out the fact that it is rampant among the children and adults in the subtropics and tropics—for example, in Florida, Hawaii, Jamaica and Trinidad. This distribution constitutes a strong argument against regarding rickets as the essential etiologic factor of dental caries.

A similar consideration of geographic distribution argues against the acceptance of scurvy as an important causal factor of caries, which is present in marked degree where fruit and vegetables are in greatest abundance and, on the other hand, is least prevalent in countries, such as Alaska and Greenland, where antiscorbutic foods are scarce.

An analysis of clinical conditions likewise indicates that dental caries cannot be attributed to a deficiency of vitamins A or B.

Pathologic lesions of the enamel are by no means infrequent among young children. This is a disorder quite distinct from caries and involves particularly the upper incisor teeth. It is found in the deciduous teeth of children who have had neither rickets nor scurvy As has been shown by others, there is often an association between this disorder, infantile tetany and a deficiency of calcium in the blood.

A relationship exists between growth and the occurrence of caries and more particularly between development and caries. This is clearly brought out by plotting a curve of incidence of caries and noting the exceptionally high incidence at the period of adolescence and the years immediately succeeding.

Maximum Dosage in Pollen Therapy

In *J. Allergy*, Jan. 1932, Dr. G. T. Brown, of Washington, D.C., states that for the past six years he has been using glycerine pollen extracts exclusively in the treatment of hay-fever. He is of the opinion that very strong doses are necessary for perfect results, and hence that the extracts should be prepared as concentrated as possible; at present he is using 6- and 10-percent extracts. By a 6- or 10-percent extract is meant 6 or 10 grams of pollen to 100 cc. of extracting fluid. Such strong extracts were prepared in collaboration with the Swan-Myers Laboratories.

Seasonal hay-fever patients are advised to start treatment about six months in advance of their season.

Provided that extracts of the causative pollens are used, the results in the treatment of seasonal hay-fever or pollen asthma are directly proportional to the size of the maximum dose attained before season.

By gradually working up to large enough preseasonal doses, such as 60,000 to 100,000 pollen units, failures are eliminated from hay-fever therapy and perfect results practically assured. (One unit equals one one-millionth of a gram of pollen.) To administer such strong doses, it is necessary to give up to 1 cc. of 6- to 10-percent pollen extracts. Although these doses are much larger than are being used by other workers in the field of allergy, the author's extensive use of them indicate that they may be given with perfect safety and comfort, providing sufficient care and judgment are used in regulating the preliminary increases in dosage in the individual patient.

The initial dose is usually 3 to 10 units (0.05 to 0.1 cc. of the 1:1,000 strength); each subsequent dose is regulated principally by the amount of local reaction from the preceding one. With the average patient, the dose may be doubled each time, with from a day to a week between successive doses.

Furthermore, the evidence at hand would seem to indicate that the administration of such massive doses leads to complete and permanent desensitization, with a disappearance of positive skin reactions.

Continuous Intravenous Drip of Dextrose Solution in Toxicosis

In Am. J. Dis. Child., Part I, Oct., 1931, Drs. S. Karelitz and B. Schick, of New York, report that 30 patients with toxicosis were treated by continuous intravenous administration of a 5-percent solution of dextrose in physiologic solution of sodium chloride or in Ringer's solution, combined with a transfusion of blood and a period during which all food by mouth was withheld.

Of 21 of these patients, diagnosed clearly as severe toxicoses alone, only 3 died—a mortality of 14 percent. Four (4) patients who were severely toxic presented evidence of severe pneumonia before treatment was started; all died. The 5 remaining patients, who were very toxic but lacked some criterion for the diagnosis of toxicosis, all recovered.

In the entire group there were 7 deaths—a mortality of 23 percent. These results compare with a mortality of 64 percent in cases of toxicosis for the past 10 years and 46 percent is the lowest in any one year.

The authors believe that the administration of food by the continuous intravenous method is a definite improvement in the treatment. During the time of the intravenous flow, the gastro-intestinal tract, as well as the entire body, is given a much needed rest; vomiting is stopped, thirst is created and in many cases diarrhea is favorably influenced.

All but four of the patients did well on from 600 to 900 cc. of fluid daily, or about 130 to 180 cc. per kilo of body weight. The intravenous flow was continued for 48 hours or more, unless detoxification was complete in less time.

The transfusion of blood was made about one or two hours after the intravenous administration of dextrose. The amount given varied from 100 to 200 cc. It proved to be an excellent measure.

All cases of toxicosis in children should be considered as severe and treatment should be instituted immediately after diagnosis is made.

Oral feeding of milk should begin with small quantities (5 to 10 cc.), increased gradually. If there is a relapse, the whole treatment should be begun anew.

Prophylactic Gynecology in Post-Natal Patients

In *J.A.M.A.*, Sept. 12, 1931, Dr. A. F. Lash, of Chicago, remarks that the physician's responsibility does not end when the obstetric patient leaves the hospital. The woman must be impressed with the necessity of returning for a postnatal examination.

The analysis of 1,516 postpuerperal women demonstrates the frequency of pelvic pathologic changes. These various incipient gynecologic conditions, such as cervical lacerations (33 percent of the patients), perineal relaxations (22 percent) and retrodisplacements (23 percent), may be remedied by simple office procedures. These conditions may be treated, although there may be no symptoms, in order to avoid in the future more extensive pathologic conditions. The common triad of headache, dizziness or weakness, and backache, may be banished now and thus the development of neurasthenia or chronic invalidism avoided. Surgical measures may also be carried out at this time, when they would be conservative compared to the later more extensive work required.

Incidentally and at the same time, the patient's general welfare is observed. Such medical conditions as hypertension, cardiac and nephritic conditions, syphilis or diabetes may be further treated and studied in relation to future pregnancies.

Vitamins in the Chemistry of Nutrition

In *J.A.M.A.*, Nov. 14, 1931, Dr. H. C. Sherman reports that his experimental studies show, first, that animals fed generously in all other respects, *except that the diet lacked vitamin G* (B_2), developed, in time, various symptoms, including some or all of the following: stunting of growth, usually accompanied by diarrhea; soreness of the mouth; a dermatitis, first evidenced by the falling of hair in various regions; a generally weak condition, with increasingly severe digestive disturbances ending in death.

Comparing this symptom-complex with that of pellagra, the author points out that the dark-red patches, considered characteristic of pellagra, are terminal symptoms. It is when the food is not entirely devoid of vitamin G, but contains it in too small an amount for the needs of normal nutrition, that the condition regarded as most clearly characteristic of pellagra appears.

The vitamin G deficiency picture, whether "pellagra like" or not, is an actually experimentally reproducible reality. On the other hand, liberality of vitamin G intake apparently results in buoyancy of, rather than passable, health. This liberality, which the body seems quite able to assimilate, appears to contribute to longevity.

Referring to vitamin D, Professor Sherman points with emphasis to the fact that neither irradiation nor the ingestion of vitamin D is a panacea for problems of calcium requirements. After much study of vitamin D, *the importance of liberal calcium intake* is more fully established now than it has appeared to be at any previous time. Of course vitamin D is necessary for the calcium metabolism.

Probably a larger proportion of the ordinary dietaries, both of adults and of children, can be improved by *enrichment in calcium* than in any other one chemical element.

When calcium intake is not liberal, the body may still be able to store calcium, but usually not at an optimal rate. Optimal development of the growing body involves the retention of relatively more of calcium than of other body building material.

Children who are growing normally in height and weight often have bodies which are calcium-poor, with nothing to reveal this condition even on the most searching physical examination. But experimental evidence may be found in the rat under like conditions.

The condition is apt to persist unduly *when-*

ever the food does not contain the high calcium content needed for the rapid calcification (ossification) of optimal development, and it must be regarded as retarding the progress of the body from infancy to adulthood; it probably plays a part in a number of weaknesses and increased susceptibilities to infection.

The Treatment of Poliomyelitis

The ability of serum to affect the course of poliomyelitis after symptoms have appeared is a matter of the greatest importance.

In J.A.M.A., Nov. 28, 1931, Dr. E. B. Shaw and associates report that 104 patients with poliomyelitis were admitted to the Children's Hospital, San Francisco, from July to Dec., 1930. Specific therapy — pooled or unpooled convalescent serum, citrated whole blood from convalescents or serum from immunized animals —was attempted in 92 cases.

The following Table gives a summary of the results obtained:

Cases Treated Before Onset of Paralysis (53)

	NO. OF CASES	AVERAGE AGE IN YEARS	AVERAGE CELL COUNT	AVERAGE DAY OF TREATMENT	AVERAGE AMOUNT OF SERUM, CC.
No paralysis	28	9.5	146	2.7	120
Transient weakness	15	10	119	3.6	151
Definite paralysis	9	17	197	3.4	209
Death	1	9	270	.....	375

Cases Treated After Onset of Paralysis, Still Acute (39)

Transient weakness	9	6.8	67	3.7	84
Definite paralysis	23	11.7	194	4.2	156
Death	7	19.8	199	6.3	156

Summary of All Cases: Total 92

	TOTAL NO. OF CASES	NO PERMANENT PARALYSIS	DEFINITE PARALYSIS	DEATH
Cases treated before onset of paralysis	53	84.4%	16.9%	1.9%
Cases treated after onset of paralysis, still acute	39	23.08%	59.0%	18.0%
Total	92	56.5%	34.8%	8.7%

This series and its results, the authors think, is fairly convincing evidence of the value of the treatment. It is their conviction that the use of known highly immune serum will be productive of consistent results and that hyperimmune animal serum offers the greatest promise in this direction.

Raynaud's Disease—A Vasomotor Neurosis

There appears to be no doubt that Raynaud regarded the disease, now known by his name, as a vasomotor neurosis. This theory was not seriously challenged until Lewis, quite recently, put forward the view that the disease was a result of local abnormality of the digital arteries—that cyanosis of the fingers could be produced after anesthesia of the ulnar nerve or after cervico-thoracic sympathectomy.

In *Arch. Neurol. & Psychiat.,* Oct., 1931, Dr. S. Levy Simpson and associates, of the Mayo Clinic, criticize Lewis's views as being based on particularly severe cases and not applicable to Raynaud's disease of the common type. These authors have made an experimental and clinical study of the behavior of the extremities after complete interruption of the vasomotor nerves, either by local anesthetization or by cervicothoracic sympathectomy. These studies have led them to conclude that, in early and comparatively mild, uncomplicated, typical cases of Raynaud's disease the abnormality lies in the sympathetic nervous system. In severe and complicated cases there is abnormality both of the sympathetic nervous system and of the digital arteries.

In treatment, cervicothoracic sympathetic ganglionectomy occasionally fails to give com-

plete relief, because of failure to section all of the sympathetic fibers; lumbar sympathetic ganglionectomy is always completely successful.

The great preponderance of the authors' experimental evidence confirms Raynaud's original view of an abnormality of the sympathetic nervous system, but local vascular fault may also be an important factor.

The Hemorrhagic Diathesis in Experimental Scurvy

In *J. Exper. Med.*, Feb. 1, 1931, Dr. G. Dalldorf, gives the following conclusions, following experimental investigation of the hemorrhagic diathesis in scurvy:

1.—The degree of scorbutic change in the vessels of animals with experimental scurvy (produced by a diet deficient in vitamin C) can be roughly measured by establishing the amount of negative pressure required to produce petechial hemorrhages in the skin.

2.—The test shows that the hemorrhagic diathesis in experimental scurvy develops earlier than any other known sign of the disease and that it persists in some degree throughout.

3.—The response of the blood vessels to the administration of antiscorbutic substance is extremely rapid, as shown by this test, but it varies with the amount of antiscorbutic given and its method of administration.

4.—The changes in the resistance of the vessels follow a curve which rises towards recovery during the end of the first week on a scorbutic diet, reaches a peak in the 2nd week and then falls steadily during the remainder of the course of the disease. This indicates that the course of the disease is not constant and progressive.

5.—The test may have clinical value in the diagnosis of scurvy.

The Use of Castor Oil, Quinine and Pituitary Extract in Induction of Labor

In *Surg. Gynec. & Obstet.*, Nov., 1931, Drs. A. Mathieu and M. S. Sichel, of Portland, Ore., report the results observed in 320 consecutive cases of induction of labor, using the castor oil, quinine and pituitary extract method.

The method is as follows: In the hospital the patient is given 2 ounces of castor oil and 10 grains of quinine sulphate and, exactly 2 hours afterward, a hot soapsuds enema. As the enema is about to be expelled, 3 minims of pituitary extract are given hypodermically. This same dose of pituitary extract is repeated every 30 minutes until labor starts and no longer. From then on, the labor is conducted as though the onset has been normal. Failure is admitted and the procedure stopped if 8 hours pass without labor being started or if there is absolutely no sign of any effect toward induction or if the continued use of the injections is too trying to the mother. In such cases the procedure is stopped, the mother is given an hypnotic or sedative and, after 24 or 48 hours, the induction is again attempted.

Over 2 years ago, the quinine sulphate dosage was cut from 10 grains to 5 grains. The last 120 inductions were made without any quinine sulphate whatever. We feel that the induction can be done without the quinine; and since several authors have reported intrauterine deaths which they think were caused by quinine, we feel that it is better to do without it.

This method of induction of labor was successful in 96.6 percent of the cases. It caused no increase in the maternal mortality, the maternal morbidity fetal mortality, or fetal morbidity.

Induction was most successful when the head was engaged and the cervix effaced. It was apparently not responsible for the occurrence of any pathologic conditions during labor, delivery, or the puerperium.

In this series of 320 cases, there appeared no basis for the fear some hold that the use of pituitary extract in the induction of labor causes separation of the placenta.

In this number of cases, which on close analysis seem to include most of those cases that promise trouble (the toxemias, eclampsias, large babies, contracted pelvic outlets, etc.), the maternal morbidity and the fetal mortality were surprisingly low; in fact, it appears to us that in this series the induction saved much maternal morbidity and several fetal lives.

Two hundred and forty-seven (247) patients were delivered by forceps.

Treatment of Fractures of the Ankle

In *Ohio S. M. J.*, Oct., 1931, Dr. R. G. Carothers, of Cincinnati, points out that there are four types of injury, with four types of deformity, comprised in fractures of the ankle.

As regards treatment, first the fracture, or fractures, are thoroughly anesthetized by the injection of procaine; then the fragments are manipulated into place by holding the leg firmly and pulling or pushing the foot, which includes the astragalus and the lower fragments, either toward the inner or outer sides or backward or forward, depending upon the nature of the deformity.

The patient is then asked to sit up, with his feet over the edge of the table. The surgeon then seats himself before the patient and places the patient's feet upon his thighs, one on each. The height of the table and the height of the surgeon's chair should be so arranged that, as the patient sits, his knees will be approximately at right angles and, as his feet rest upon the surgeon's thighs, his ankles will also be at right angles to the legs. It is important that the injured foot rests upon the surgeon's thigh in a square position in exactly the same manner as the normal foot strikes the floor when a man stands upright.

The surgeon then, with the palms of his hands, presses and kneads the ankle until most of the edema is out of it. This process should be continued until the bony landmarks can be felt, the true relations of the fragments can be determined and the surgeon satisfied that the reduction is good. A plaster of Paris cast is then applied, directly over the skin. As soon as this cast is sufficiently set, an x-ray check-up is made and, if the reduction is not entirely satisfactory, the cast is immediately

removed and a new one applied, accurate attempts being made to correct any mistake. When one is satisfied with his reduction, the patient is put to bed with his foot elevated.

At the end of six, eight or ten weeks, depending upon the severity of the injury and the age of the patient, the plaster cast is removed and a dressing of Unna's paste applied.

Rheumatic Heart Disease in Children

There is still much to be learned respecting rheumatic cardiac disease, especially in children. In *Am. J. Dis. Child.*, Sept. 1931, Drs. M. Seham, M. J. Shapiro and Eunice H. Hilbert, of Minneapolis, have made a special clinical study of the condition, based on the investigation of children admitted from 1923 to 1930 to the Minneapolis General Hospital and Lymanhurst Clinic for Heart Disease of Children. From this study the authors conclude:

1.—In 809 patients admitted during a period of seven years, 46 percent of the cases were diagnosed as organic heart disease and 54 percent as "no heart disease."

2.—Of 379 cases of organic heart disease, 18 percent were congenital lesions of the heart; 74 percent were rheumatic in origin; only 3.6 percent were due to other causes and 4.4 percent were undiagnosed.

3.—For early diagnosis of rheumatic heart disease, all available methods are necessary, namely: (1) etiologic (2) structural, (3) functional, (4) roentgenologic and esophagraphic and (5) electrocardiographic.

4.—The problem of differential diagnosis revolves chiefly around the children who present the following conditions: (1) a systolic murmur, with or without circulatory signs and symptoms; (2) rheumatism and a systolic murmur that has escaped carditis; (3) rheumatism and a systolic murmur that ultimately develops into chronic endocarditis; and (4) congenital heart disease, especially patency.

5.—According to the authors' statistics, the most reliable means of diagnosis is the history. A questionnaire gives more positive data than informal questioning. In 92 percent of the cases of early mitral disease they were able to obtain a history of rheumatism.

6.—Rheumatism alone causes 39.3 percent of rheumatic heart disease; rheumatism in combination with other causes, 83.1 percent. "Growing pains" alone are responsible for 2.3 percent.

7.—In the first contact, 42 percent of the cases diagnosed as "early mitral disease" show abnormalities revealed by the x-rays; in the cases called "all others," 84 percent were abnormal.

8.—The roentgenogram, taken at a distance of 6 feet, is as reliable for the practical purposes of diagnosis in children as is the orthodiagram.

9.—The 50 percent cardiothoracic index that is used as a normal standard is statistically not highly reliable. In 66 percent of normal children the cardiothoracic index is between 44 and 50 percent, and the remaining 33 percent fall between 41 and 54 percent. In 25 of 100 consecutive examinations of normal children, one is likely to find a cardiothoracic index of over 50 percent.

10.—A positive esophagram reveals a dilatation of the left auricle. This does not appear in children with congenital heart disease, in those with miscellaneous heart disease or in normal children.

11.—The esophagraphic results are positive in 55 percent in cases diagnosed as mitral regurgitation. In this group the esophagram is more sensitive than auscultation. It gives positive observations in 67 percent in the group diagnosed as double mitral disease and 77 percent in those with double mitral disease and aortic regurgitation.

12.—The absent iso-electric period in lead II and the delayed P-R interval are indications of active rheumatic infection. The former does not occur when there has been no rheumatism.

13.—The socalled functional heart tests are of no value in determining the myocardial sufficiency of the heart.

14.—The functional method of diagnosis by the taking of the patient's history is probably the least sensitive of all methods for a diagnosis in the early stages.

A Study of Pneumococcus Type III Pneumonia

A clinical study of pneumococcus Type III pneumonia is given in *Ann. Intern. Med.* for Dec., 1931, by Dr. F. G. Blake, of Newhaven, Conn. This study is based on a consecutive series of 122 cases (out of a total of 606 pneumonia cases), admitted to the New Haven Hospital during the ten-year period from Jan. 1, 1921, to Jan. 1, 1931.

Confirmatory of previous reports, it has been found that the incidence is greatest in the later decades of life, approximately 50 percent of the cases being over 55 years of age. Males were nearly twice as numerous as females. There was no special racial susceptibility found. The monthly incidence corresponded to that of pneumonia in general.

Acute predisposing causes played a very important part in the etiology of the disease, being of undoubted significance in 75 percent of the cases. The most frequent predisposing causes were the acute respiratory infections—common colds, grippe and influenza. These immediately preceded the onset of the pneumonia in 52 percent of the patients. Exposure, exhaustion and acute alcoholism were recorded in 17 percent. Chronic disease existed in 66 percent of the patients and, in all probability, exerted a significant influence on susceptibility. Chronic pulmonary and vascular diseases and chronic alcoholism were predominant.

The onset, the clinical course and the symptomatology of the disease were similar to those of other forms of pneumococcal pneumonia. In young adult life, in otherwise healthy individuals, the disease ran a mild course with early critical recovery. In the later decades the disease ran a more prolonged course and recovery by crisis was the exception.

Pneumococcus complications were of the usual frequency. Empyema occurred six times, pericarditis twice and endocarditis once. Otitis media occurred five times in children.

In spite of the high mortality, bacteremia was found in only 18.1 percent of 116 cases and in only 37 percent of the fatal cases. In the latter it occurred mostly as a terminal invasion, 24 to 48 hours before death. In only three cases was a high degree of bacteremia encountered.

Although the total mortality in this series was high (44.3 percent), it is shown that this was largely determined by the factor of late age incidence and by the prevalence of chronic disease at all ages in those who succumbed. In 40 cases not subject to chronic disease and irrespective of age, the mortality was only 15 percent, while in 79 patients suffering from chronic disease (including 2 with pregnancy) the mortality was 56.9 percent.

Finally, it may be concluded on the basis of the data presented, that pneumococcus Type III pneumonia is a highly-fatal, specific infectious disease due, in general, not to a highly virulent organism that attacks and kills a healthy host, but rather to a debilitated, sickly or senescent host that succumbs to what is a relatively mild and uncommon infection in the young and vigorous.

Effect of Elementary Phosphorus in Rickets

In regard to a recent reopening of the question of the value of elementary phosphorus in rickets, Dr. A. F. Hess, of New York, in *Am. J. Dis. Child.*, May 1931, points out that, although there can be no doubt that elementary phosphorus brings about calcification of bone, this does not mean that elementary phosphorus, alone or in combination, is of value in the prevention and cure of rickets. Rickets is a disorder characterized essentially by failure of the proliferating cartilage to calcify. It is in this respect that elementary phosphorus is entirely lacking in therapeutic effect.

What elementary phosphorus does accomplish is to bring about calcification when osteoporosis complicates rickets, inducing a deposition of calcium salts in the juxta-epiphyseal region of the bones. It is, therefore, of value in the treatment of the premature baby with rickets and in the porotic form of rickets.

Probably elementary phosphorus is a serviceable adjuvant to cod-liver oil, in the cure of patients with osteomalacia. It has, however, no field in prophylaxis against rickets or in the cure of the patient with the ordinary case of rickets, because it exerts no action on the calcification of the proliferating cartilage. It is far better to increase the potency of cod-liver oil by adding a small amount of viosterol, which is a specific in the prevention and cure of rickets.

Milk and Orange Juice for Peptic Ulcer

A new peptic ulcer diet, using milk modified by the addition of orange juice, is suggested by Drs. R. C. Blankinship and W. H. Oatway, of Madison, Wis., in *Ann. Intern. Med.*, Apr. 1931.

The formula which has given most satisfaction is as follows: Milk, 24 ounces; cream, 8 ounces; strained orange juice, 10 ounces; sugar, 20 Grams. This is given in 6-ounce feedings every 2 hours from 8 A.M. to 8 P.M. The diet is appropriately balanced and meets the demands made by the ulcer-bearing stomach. This mixture gives soft and fine curds. The diet is used during the initial period of dietary treatment of peptic ulcer, while the patient is still in bed.

The diet has been used in peptic ulcer cases by the authors with great satisfaction.

A Practical Belt for Mercury Inunctions

The usual methods of mercury inunction for the treatment of syphilis are often not feasible, because patients will not comply with the necessary instructions.

In *Venereal Dis. Information*, July, 1931, Dr. O. C. Wenger, of the U.S. Public Health Service, describes a rubber-faced belt which was devised to meet the situation. It has the following dimensions: Length of rubber face, 15 inches, and width, 5 1/2 inches. At each end of the rubber material, a 3 by 2 inch elastic material was attached to make the belt fit snugly against the skin and to admit freedom of movement. Ties are attached to the elastic and encircle the waist and are fastened with a safety pin or an ordinary bowknot.

The patient is then instructed to apply his daily ration of mercury over the skin on the abdomen, selecting a new area each day to prevent irritation of the skin. The belt is worn during the day and removed at night. After the mercury is applied to the skin and the belt put in position, every movement of the patient causes sufficient friction to promote absorption of the drug and, in from one to two hours, the daily dose of mercury is absorbed into the skin. Some 4,000 of these belts are now in use and have proven satisfactory from a practical standpoint.

The life of the belt is between three and four months, when it must be replaced. It is believed, from a practical standpoint, that the use of this belt in a large number of cases will solve many of the clinician's problems and assure the patient a less painful and objectionable means of mercury therapy.

New Treatment of Chronic Ulcer of the Leg

In *Am. J. Surg.*, Sept., 1931, Drs. I. S. Tunick and D. H. Kling, of New York, describe their method of treating chronic ulcers of the leg by isotonic saline injections.

Analysis has shown that the ulcer is surrounded by a thick ring of fibrotic tissue, which shuts it off from the normal blood supply and prevents healing. Injection of saline solution through the edges is able to break down the fibrotic ring and promote the formation of healthy capillaries and granulations.

A 5 to 10 cc. Luer-Lock Syringe is filled with physiologic salt solution; a 22 or 23-gauge, 1 inch or 1 1/2 inch needle is employed. The injection is started at the edge of the ulcer; the needle is inserted until it passes the resistant fibrotic edge. If the ulcer is large, its entire

circumference should be injected at about 1/4 inch intervals. The amount of solution injected varies from 2 to 10 cc. depending upon the size of the ulcer and the surrounding fibrosis.

It may be advisable to anesthetize the ulcer with 2 percent procaine solution.

The treatment is repeated every 3 or 4 days until the ulcers begin to heal, the ulcer being dressed with a bland ointment or sterile vaseline. A supporting bandage should follow the treatment for a few months.

This treatment was successful in 88 percent of 25 cases in which it was applied, some of these being inveterate ulcers lasting over 30 years. It may be used in case of sloughs following the injection treatment of varicose veins.

Calcium and Nutrition

According to a survey by Dr. G. S. Milberry, of the University of California College of Dentistry, of dental conditions in the Hawaiian islands, as given in *Oral Hygiene*, Feb., 1931, poor teeth are the result of a lack of calcium normally supplied by consumption of milk. Among the islanders this quantity was approximately one-quarter of a pint per person per day, compared with three-quarters of a quart per person daily in the United States. The well-water supply and the soil were also very deficient in calcium. Most of the children in the schools showed characteristics of imperfect calcification. In one class of 49 children, Dr. Milberry failed to find one single sound tooth; all were decayed or defective.

Ocular Injuries

The utmost care should be exercised in the management of injuries to the eyes. In *New York St. J. Med.*, Sept. 1, 1913, Dr. N. S. Weinberger, of Sayre, Pa., gives the steps necessary in the examination of such patients, as follows:

1.—Face and skin for evidence of injury.

2.—The lid margins, the opening of the glands, the condition of the punctā, followed by compression of sac to show presence or absence of chronic inflammation.

3.—Conjunctival sac; that is, the portion covering the under sides of the eyelids, the globe and in the fornices.

4.—Cornea: examine for smoothness of surface and clearness, for evidence of past or present injury. The condensing lens — binocular loupe—magnifying glass or slit lamp should be used.

5.—The anterior chamber should be inspected through the cornea by both daylight and artificial illumination. The character of the aqueous, the integrity and activity of the iris, the lens, the inner contents and fundus should be examined. Finger tension should be taken. Visual fields should be tested.

6.—If there is no visible injury of the eye, the muscle excursion should be tested. In the diagnosis of foreign body the symptoms of pseudo-foreign body must be considered, such as interstitial keratitis, acute iritis, pigment deposits, old synechia, etc.

Sensation of a foreign body may be the only symptom of eye strain. Intra-ocular studies are made through the ophthalmoscope, the slit lamp and by roentgenograms.

Digitalis in Congestive Heart Failure

There has been undue lay and medical prejudice against the use of digitalis unless there is marked congestive failure or auricular fibrillation.

In *Maine M. J.*, Sept., 1931, Dr. P. D. White, of Boston, asserts that life can certainly be prolonged and made more useful and happy by restoring and maintaining with digitalis the tone of the heart muscle which has begun to fail, whether or not the heart rhythm is normal. It is a wonderful drug, and even without rest, may restore normal heart function. Of course it must be given in the proper dosage. Too little is to be deprecated as well as too much. It may be that a very small so-called tonic dose of a very few drops or minims of the tincture or of a small fraction of a grain of the dried leaf daily can help, but of that there is little proof.

A very useful method of giving digitalis, in effective but not poisonous amount, to patients with slight congestive heart failure is to prescribe one pill or tablet of 1 1/2 grains of the standardized dried leaf three times a day for from five to nine days, averaging seven days, and then to reduce the dose to one pill or tablet daily for weeks, months, or years as may be thought wise. A delicate, slight or old person becomes digitalized more easily than a robust, heavy, young adult, and so there should be some variation of dosage, but not strictly according to weight, as was taught a few years ago.

Sometimes proper rest and digitalis are not sufficiently effective to dispel congestive heart failure and edema; diuretics must then be employed. The most satisfactory agent of this kind which the author has found is theocalcin, given in the dosage of 15 grains (1 Gm.)—two 7 1/2 grain tablets—two or three times a day for a few days at a time or longer.

The treatment of congestive heart failure can be carried out by the family doctor as well as by the internist.

Decapsulation of the Epididymis

Epididymotomy (multiple punctures) usually is followed by cessation of symptoms of epididymitis, but recurrence occasionally follows.

In *New York St. J. M.*, July 15, 1931, Dr. M. Meltzer, of New York, reports that for about the 3 years past he has, in the course of an epididymotomy, incised and stripped back the capsule of the epididymis. The technic is analogous to that of a renal decapsulation.

Decortication not only suspends all tension upon the swollen epididymis, but also exposes any abscess foci. No recurrences have been noted and relief of symptoms is quicker. Decapsulation makes a more surgical procedure of epididymotomy.

The author has continuously employed decortication in cases of epididymitis that usually call for an epididymotomy.

NEW · BOOKS

Some books are to be tasted, others to be swallowed, and some few to be chewed and digested.—LORD VERULAM

Thorek: Surgical Errors and Safeguards

SURGICAL ERRORS AND SAFEGUARDS. *By Max Thorek, M.D., Surgeon-In-Chief, The American Hospital, Chicago; Attending Surgeon, Cook County Hospital; Corresponding Member, Société des Chirurgiens de Paris, France; Associate, Royal Academy of Medicine, Torino, Italy; Honorary Corresponding Member, Egyptian Medical Association, etc. With a Foreword By Arthur Dean Bevan, M.D., Professor and Head of the Department of Surgery, Rush Medical College of the University of Chicago. 668 Illustrations, Many Colored. Philadelphia and London: J. B. Lippincott Company. Price* $10.00.

Experientia docet is a maxim that is accepted as a truism. It is as true in surgery as in any other department of human knowledge and skill; but it is an unfortunate fact that experience or expertness in the art of surgery must be acquired mostly by errors of judgment or technic or of both, often inflicting injury upon or even costing the life of the patient.

Surgery cannot entirely be learned from books, nor even from watching and studying the actions of clinical teachers; it is a personal accomplishment, to be gained mainly, if not wholly, by actual practice of what ought and ought not be done. Furthermore, though many learn to operate well or even perform unusual operations skilfully, the real surgeon, worthy of the highest trust, is he who can be relied upon always to do best what most do well.

This book is, therefore, of the greatest interest and importance to all those who practice the art of surgery, because it gives one what is not to be found in textbooks—the collected wisdom of experience gained, not alone from a long practice and some frankly acknowledged personal errors, but from the errors of others garnered from many sources.

But there are safeguards as well as errors, and Thorek's experience of 25 years in general surgical practice has shown him many ways of verifying a diagnosis, of judging of the opportuneness or otherwise of operations, of safeguarding the patient and of ensuring the successful issue of an operation. Here are a thousand hints, culled from personal experience and from that of hundreds of operators all over the world, as to what to expect in various surgical conditions; what to do; what to avoid; and of manifold unlooked for happenings that may beset any surgical procedure.

The text covers errors in connection with surgical operations in general, and then deals, in detailed chapters, with the errors and safeguards associated with surgery in various regions of the body. It would be difficult to pick out chapters more admirable than others, but those dealing with abdominal operations, operations on the stomach and intestines and gynecologic operations display the author's technical versatility and keen judgment and, if anything, are richer in surgical hints of more value to the general operator than others. An admirable feature throughout the whole work is the illustration of the subjects discussed by case reports from the practice of the author or of others, taken from the literature.

So far as American surgical literature is concerned, this book appears to be unique and Dr. Thorek is to be congratulated upon the production of a work that should be of singular value to all who practice surgery. It is a volume for the practicing surgeon who can appreciate the difficulties and the fine points of a surgical operation, or for the advanced student, but not for the surgical tyro. Teachers of clinical surgery should be able to supplement the orthodox teaching of surgery by many examples to be found here.

The book is excellently printed, amply illustrated (there are many original drawings) and fully indexed. It should be in the library of every progressive surgeon.

Coca, Walzer and Thommen: Asthma and Hay-Fever

ASTHMA AND HAY FEVER IN THEORY AND PRACTICE. *By Arthur F. Coca, M.D., Matthew Walzer, M.D. and August A. Thommen, M.D., Springfield, Ill., Charles C. Thomas Publishers.* 1931. *Price* $8.50.

That the medical profession is rapidly becoming allergy-minded is evidenced by the publication of not less than five books on the theoretical and practical phases of asthma, hay-fever and kindred allergic diseases during the past twelve months. To appreciate the present situation it is only necessary to remember that it is scarcely ten years since the first book of this type made its appearance (the word "allergy" was used in parenthesis.)

The present volume by Coca and his associates differs from all others so far published in that it is a joint effort, in which each author is responsible for an entire section of the book. As the writers have been associated for many years in their work, they each have practically the same viewpoint but they have not failed to include, and in many cases to discuss, other viewpoints than their own.

As a summary of the now voluminous magazine literature on allergy, there is nothing so complete. Almost every scrap of opinion and experience in this field has been included. The size of the volume (more than 800 pages) stamps it as a reference work and, as such, its usefulness would have been slightly increased if the more than 2,000 items in the three bibliographies had been indexed. Some of the chapters go into such detail that they can be regarded only as reference material. Other chapters are suitable for fireside enjoyment. The chapter on the history of hay-fever is especially delightful. There is very little padding. Everything is arranged in an orderly sequence and, with the possible exception of certain portions of the botanical section, is all evidently pertinent. Diagnosis and therapy are treated in utmost detail and all variations in technic which are in use in the various allergy clinics are fully presented. The press-work is excellent.

O.C.D.

Hertzler: Pathology of the Female Generative Organs

SURGICAL PATHOLOGY OF THE FEMALE GENERATIVE ORGANS. *By Arthur E. Hertzler, M.D., Surgeon to the Agnes Hertzler Memorial Hospital, Halstead, Kansas, Professor of Surgery, University of Kansas. 285 Illustrations. Philadelphia, Montreal & London: J. B. Lippincott Company.* 1932. *Price* 5.00.

This is the fourth of a series of monographs which Dr. Hertzler has prepared on the surgical pathology of different regions and organs of the body. The author confines himself to what he has personally seen and to end-results of which he knows.

Experience has led Dr. Hertzler to emphasize the need of conservatism in operation and to point out the tragic effects of the frequent useless operations, especially on the uterus and ovary, which practice he considers has reached the magnitude of a major tragedy. In the ovary it is shown, for instance, that most cystic conditions are due to functional rather than organic causes; that they do not really threaten the life of the patient; and that disturbances supposedly due to them rectify themselves in time.

It is suggested that very frequently hysterectomies are performed because pathologists prefer, in doubtful cases of malignant disease, not to err on the negative side, and surgeons are more concerned about a successful operation than with the post-operative life of the patient.

Although a good deal of the *furor operandi* in regard to the female pelvis has died out, examination of the histologic slides of tissues, as shown here by Dr. Hertzler, might suggest that, in a rather large proportion of socalled surgical diseases of the female genitalia, it might be a good thing for patients if surgeons and surgical pathologists were more conservative still in recommending operation as the only treatment.

The present monograph is divided into 3 parts: Part I, dealing with diseases of the external genitalia; Part II, with diseases of the tubes and ovaries and Part III, with the diseases of the uterus. The whole work is amply illustrated by original microphotographs and drawings.

This is a work which surgeons, pathologists and family physicians should study carefully. It has important social as well as medico-surgical aspects.

Straub: Surgery of the Chest

SURGERY OF THE CHEST. *By George F. Straub, M.D., F.A.C.S. With Three Hundred and Forty-one Illustrations Including Sixty-eight Color Plates. Springfield (Ill.) and Baltimore: Charles C. Thomas.* 1932. *Price* $10.50.

Thoracic surgery is practically a development of the past quarter-century; traumatic surgery of the heart and pleural cavity received a great impetus during the World War; and, within the past decade, the surgical treatment of bronchiectasis, pulmonary tuberculosis and empyema, besides other special pathologic conditions within the thoracic cage, have made thoracic surgery almost as important, from the general surgical viewpoint, as abdominal surgery.

Although the literature on these subjects is extensive, there is always a need for a book summarizing its special aspects and the author has attempted to supply this need. In the 40 chapters which make up the book, the various procedures in the present-day aspects of thoracic surgery are described in detail, so as to furnish a practical manual for operators. The chapters on thoracoplasty and cardiac surgery (including the cardiac vessels) are particularly well and clearly written and many of the excellent illustrations which clarify the text are the author's personal work, showing him to be a competent medical artist.

Other chapters which strike us as particularly well done are those on pleurisy and empyema, on acute and chronic suppurations of the lung and on bronchiectasis. Pneumolysis, pneumonectomy and other modern thoracic surgical developments are fully dealt with.

The author has thoroughly combed the literature of his subject and presents its findings, as well as his own work, in a concise and well-digested manner. His book, we feel sure, will find its deserved place on the shelves of all surgeons, especially thoracic specialists. The many special illustrations call for particular commendation.

Laird: Personality

WHY WE DON'T LIKE PEOPLE. *By Dr. Donald A. Laird, New York: The Mohawk Press.* 1931. *Price* $2.00.

The Scottish Bard sang:

"O, wad some power the giftie gie us
"Tae see oursel's as ithers see us."

In this volume, the director of Colgate University Psychological Laboratory puts before the reader some of the material his and others' researches have uncovered and outlines a plan for acquiring the power for which the poet prayed so earnestly.

No pretense is made that there is anything final about this material and few conclusions are even suggested. It is frankly laboratory stuff, largely undigested — but decidedly fascinating.

Dr. Laird's smooth, direct and rather friendly style leads one along.

One of the chief factors in human happiness is to have people like one. If they don't, most folks have no knowledge of the reason why. If we could have the traits which make for popularity set before us in direct fashion, most of us would set about acquiring them at once. This Dr. Laird seems, measurably, to have accomplished, and his work is still in its kindergarten stages, so to speak.

There is a good deal of talk about introverts and extroverts. What are they, and why? Here one will find directions for discovering which of these types oneself and one's friends belong to and suggestions as to the line of activity in which persons of the two types function most smoothly; also hints as to how undesirable qualities may be minimized or eliminated. It will surprise most people to learn that a high percentage of students who win the Phi Beta Kappa key for outstanding scholarship are psychically unstable introverts. Less surprising is the discovery that most strong leaders or executives are rather strongly extroverts.

The chapters on the reasons for unhappy marriages and on suiting the vocation to the personality are especially helpful.

No physician or teacher can afford to miss reading and studying this straightforward and unpadded book, and there are few in its general class which will give the average intelligent reader so much usable information to assist him in remolding his scheme of things nearer to his heart's desire.

McPheeters: Varicose Veins

VARICOSE VEINS; With Special Reference To The Injection Treatment. *By H. O. McPheeters, M.D., F.A.C.S., Director of the Varicose Vein and Ulcer Clinic, Minneapolis General Hospital; Attending Physician New Asbury, Fairview, and Northwestern Hospitals, Minneapolis, Minn. Illustrated With 62 Half-Tone and Line Engravings. Third Revised and Enlarged Edition. Philadelphia: F. A. Davis Company.* 1931. *Price* $4.00.

The first edition of the McPheeter's book on the injection treatment of varicose veins was reviewed in CLIN. MED. & SURG., Nov., 1929, and the second edition in the issue of May, 1930.

The third edition has been revised and enlarged. Wider knowledge and experience have necessitated changes in the description of disease conditions for which the injection treatment is suitable, as well as in the actual method of treatment. A new chapter has been added on the causes of failure of this therapeutic method in certain types of cases. The clinical results as reported in the literature are discussed.

Vomiting of Pregnancy

VOMITING OF PREGNANCY, A Symposium Of The Current Literature. *New Haven, Conn.: The BiSoDol Company.* 1932. *Sent Gratis.*

This is a collection of abstracts of recent literature concerning the etiology, treatment and prophylaxis of the toxemias and vomiting of pregnancy. It contains no advertising matter. There are several illustrations.

It is a useful compendium of present-day views, which should be of decided interest and value to all general practitioners and obstetricians.

Overstreet: Enduring Quest

THE ENDURING QUEST. *By H. A. Overstreet, Professor and Head of Department of Philosophy and Psychology, College of the City of New York. W. W. Norton & Co., Inc., New York,* 1931. *Price* $3.00.

This is an important and authoritative book, full of valuable and informative material for those who read to think.

The great need is for a useable philosophy. There is an ever-increasing number of people who cannot rest content with the "cold" facts offered to them by materialistic science, but remain spiritually dissatisfied. They ask the pertinent question: "Just what are these facts and how much more real are they than what scientific materialism chooses to term 'fallacies?" Some of the "fallacies" may turn out to be very real. The fact that many of our most prominent men of science are turning to a consideration of them is highly significant.

Such a work as this is needed and will make an intense appeal to those who are earnestly seeking enlightenment on this important subject. While the author's vision is not so far-reaching as that of those who have already done some fairly extensive thinking and investigating along this line, the main thing is that he *has* visioned the true evolution of man and is in search of the great Truth.

In detail, the chapters, "Matter and Life Approaching Each Other" and "The Drama of Biology" contain much of interest and are well treated. In the chapter on evolution on the human level, the author departs from the orthodox materialistic idea, that evolution merely means change of species and that man is the culminating point; he takes the wider view that evolution is the continual unfolding from lower to higher life, and that the human level is only one fairly high rung of the ladder, with still higher ones to be attained. Other chapters of especial interest are "Love and the Wordly Wise," "Seeking a Principle of Behavior," "The Heroism of Uncommon Sense" and "God and the Modern Man."

The simple directness of Professor Overstreet's thought and the clarity of his writing will prove a decided help to all who are interested in things beyond the physical, especially to physicians in whose daily work such considerations are constant factors.

L.M.C.

Wright: Applied Physiology

APPLIED PHYSIOLOGY. *By Samson Wright, M.D., M.R.C.P., Professor of Physiology, University of London, Middlesex Hospital Medical School. Fourth Edition. New York and London: Oxford University Press, Humphrey Milford,* 1931. *Price* $5.00.

The aim of this work, which has now run into four editions, is to present clearly and con-

cisely how the various functions of the body are performed.

Although the subject is presented from the main point of pure physiology, yet the author has, as far as possible, included the clinical aspects and emphasis is laid on and particular attention devoted to those functions which are commonly deranged in disease. These features make the book interesting and helpful, not only to the physiologist and to the student preparing for examination, but also to the practitioner of medicine.

The various functions are discussed in 9 sections: The nervous system, the involuntary nervous system, the ductless glands, the blood, the heart and circulation, the respiration, the digestion, metabolism and the secretion of urine.

Owing to the small type used, a vast amount of material is included in this handy sized volume.

Thomson, Miles & Wilkie: Manual of Surgery

THOMSON & MILES' MANUAL OF SURGERY. *By Alexander Miles, M.D., LL.D., F.R.C.S. Ed., Consulting Surgeon, Royal Infirmary, Edinburgh and D. P. D. Wilkie, M.D., F.R.C.S. (Ed. and Eng.), Professor of Surgery, University of Edinburgh. Volume II — Extremities, Head, Neck; Volume III — Thorax, Abdomen. Eighth Edition. With 177 Illustrations. New York and London: Oxford University Press, Humphrey Milford.* 1931. $3.00 *each.*

This handy manual of surgery represents the subject as taught in the Edinburgh medical schools. The work is collaborative, there being 21 contributors, all being Edinburgh professors and surgical specialists.

Volume I, already noticed in CLINICAL MEDICINE AND SURGERY for August, 1931, covered general surgery, including the treatment of general infections, wounds, the systemic vessels, nerves, muscles and the surgery of the bones and joints. Volume II deals with the special surgery of the extremities, head and neck; there are 29 chapters. The surgery of the thorax and abdomen forms the subject matter of Volume III. in 17 chapters; it includes the pelvic affections peculiar to women and the genito-urinary diseases of the male calling for surgical treatment.

The manual was first issued in 1904, has run into eight editions and is a practical and concise exposition of the whole present-day art of surgery, very suitable as a reference work for a general surgeon. Each volume is fully illustrated and has a separate index.

Fabing: Aphorisms for Doctors

FISCHERISMS. Being a Sheaf of Sundry and Divers Utterances Culled From the Lectures of Martin H. Fischer, Professor of Physiology in the University of Cincinnati. *By Howard Fabing. University of Cincinnati, Ohio: The Medical College Bookstore.* 1930.

From time immemorial, the aphorism has been the steel-jacketed bullet by which ideas have been shot into armor-plated minds—and others —and it still works.

Professor Fischer must be a real human being to have said things like this and we owe a debt to the man who has collected them and presented them to us in a tiny but most attractive and unusual volume.

Every physician, of high or low degree, in city or hamlet, will be a better doctor and friend and citizen if he will keep a copy of this little book on his desk constantly and read a few paragraphs every day until they have sunk into him and become a part of his consciousness.

Practical Medicine Series

THE PRACTICAL MEDICINE SERIES; Comprising *Eight Volumes On The Year's Progress in Medicine and Surgery.*

GENERAL MEDICINE. *Edited by George H. Weaver, M.D., Lawrason Brown, M.D., George R. Minot, M.D., S.D., William B. Castle, M.D., William D. Stroud, M.D.. and Ralph C. Brown, M.D. Series* 1931. *Chicago: The Year Book Publishers, 304 South Dearborn Street.* 1931. *Price* $3.00.

GENERAL SURGERY. *Edited By Evarts A. Graham, A.B., M.D., Professor of Surgery, Washington University School of Medicine Surgeon-in-Chief of the Barnes Hospital and of the Children's Hospital, St. Louis. Series* 1931. *Chicago: The Year Book Publishers.* 1932. *Price* $3.00.

THE EYE. *By E. V. L. Brown M.D., Professor of Ophthalmology, University of Chicago; Attending Ophthalmologist, St. Luke's Hospital, Chicago and Louis Bothman, M.D.. Associate Professor of Ophthalmology, University of Chicago.* THE EAR, NOSE AND THROAT. *By George E. Shambaugh, M.D., Professor of Otology, Rhinology and Laryngology, Rush Medical College of the University of Chicago; etc. and Elmer W. Hagens, M.D., Instructor in Otology, Rhinology and Laryngology, and Friedberg Fellow in Otolaryngology, Rush Medical College of the University of Chicago. Series* 1931. *Chicago; The Year Book Publishers.* 1932. *Price* $2.50.

PEDIATRICS. *Edited By Isaac A. Abt. M.D., Professor of Pediatrics, Northwestern University Medical School, Attending Physician St. Luke's Hospital, Chicago, Children's Department. With The Collaboration of Arthur F. Abt, M.D., Assistant in Pediatrics, Northwestern University Medical School, Assistant Attending Physician, St. Luke's Hospital, Chicago. Series* 1931. *Chicago: The Year Book Publishers.* 1932. *Price* $2.25.

These year-books give a general summary, in abstract form, of the important contributions in the medical journals for the period covered. They help to give isolated practitioners, as well as others, a general idea of what is going on in the medical world.

These year-books would be improved if the respective editors gave rather fuller comments in regard to the reports abstracted, so as to give the reader a better idea of their clinical value. In the volume on general medicine, such editorial comment is particularly sparse and it is rather meager in the other volumes, less so in those on general surgery and eye, ear, nose and throat.

We also notice that the great majority of the references abstracted are in American journals. It would be well that we should know also what others are doing in other countries. But so far as it goes and for the reasonable cost of the books, the work is very well done and the busy clinician will find this series useful in keeping his professional knowledge up to date.

Fred & Waksman: Microbiology

LABORATORY MANUAL OF GENERAL MICROBIOLOGY. With Special Reference to the Microorganisms of the Soil. *By Edwin Broun Fred, Ph.D., Professor of Agricultural Bacteriology, University of Wisconsin, and Selman A. Waksman, Ph.D., Professor of Soil Microbiology, Rutgers University. First Edition, Second Impression. New York and London: McGraw-Hill Book Company, Inc., 1928. Price $2.00.*

Medical schools usually teach only pathogenic bacteriology. This knowledge may be sufficient for the practicing physician, but when his interest or his work takes him into the study of the bacteria in water, milk or food products, he is frequently at a loss to know how to work with the non-pathogens.

The book is designed for students in general microbiology, especially for those working with soils or microorganisms isolated from the soil, but should be of interest to anyone who is doing laboratory bacteriology. It contains a great deal of information on media and stains not found in many laboratory manuals.

E.B.C.

Dressler: Clinical Cardiography

KLINISCHE ELEKTROKARDIOGRAPHIE mit einem Grundriss der Arhythmien. *Von Dr. Wilhelm Dressler, Assistent der "Herzstation" in Wien. Mit einem Geleitwort von Prof. Dr. C. J. Rothberger. Zweite, verbesserte Auflage. Mit 118 Abbildungen im Text. Berlin and Wien: Urban & Schwarzenberg. 1932. Price geh RM 12.— geb. RM 13.50.*

The author describes the Einthoven, Edelmann and Siemens & Halske electrocardiographic methods and the clinical applications of cardiography in normal and pathologic subjects. The book is an excellent clinical guide on this important subject for those who wish to have a German text.

Medical Service in Industry

MEDICAL SUPERVISION AND SERVICE IN INDUSTRY. *National Industrial Conference Board, Inc. New York. 1931. Price $2.00.*

This publication of the National Industrial Conference Board gives the results of a survey of the development of the medical services to employees in industrial plants throughout the country.

Information is given concerning the medical departments of 443 companies, employing from 250 to 10,000 or more men each, representing a total of 1,125,830 workers. The services given, the costs and the general results are analyzed. A special finding is the rapid development of medical care of employees in small plants.

The survey shows that there has been a gradual shifting of emphasis from the curative phases of medical care to preventive work and health education.

In the larger plants the general cost of medical care is around $5.00 per employee per year. Aside from sociologic benefits to the employees, industry has benefited by reduced compensation claims and a large elimination of the waste involved in excessive labor turnover, absenteeism and low labor efficiency. However, judged from another angle, one may see in socalled industrial medicine a gradual shifting of responsibility from the individual to a type of paternalism which paves the way to State Medicine.

Matheson Commission on Epidemic Encephalitis

EPIDEMIC ENCEPHALTIS: Etiology, Epidemiology: Treatment. *Second Report By the Matheson Commission. William Darrach. Chairman, Hubert S. Howe, Secretary, Josephine B. Neal. Executive Secretary, Helen Harrington Epidemiologist. New York: The Columbia University Press 1932. Price $1.50.*

The Matheson Commission for the study of epidemic encephalitis, of which Dr. Wm. Darrach. of New York is the chairman, published its first report, in the nature of a survey, in 1929.

This second report is a supplement, arranged on the same plan, and covers the literature to the end of 1929. This literature is digested in the first half of the book, giving separate chapters on the etiology, types, treatment and epidemiology.

The second half of the book consists of an alphabetically-arranged bibliography and index.

For those interested, these reports form a valuable summary of what has been done on this important subject. The Committee itself is engaged on independent clinical observations, an account of which will be given in a future volume.

Gifford: Ocular Therapeutics

A HANDBOOK OF OCULAR THERAPEUTICS. *By Sanford R. Gifford, M.A., M.D., F.A.C.S., Professor of Ophthalmology, Northwestern University Medical School, Chicago, Ill.; Attending Ophthalmologist, Passavant Hospital, Wesley Memorial Hospital, Evanston Hospital. Illustrated With 36 Engravings. Philadelphia: Lea & Febiger. 1932. Price $3.25.*

The author has prepared this little manual as a "recent concise book on therapeutics," containing valuable modern procedures which have proved effective in his own practice or in that of ophthalmologists whose opinions are considered of undoubted value.

Pathogenesis and diagnosis are discussed only when necessary in regard to treatment. Surgical procedures are confined generally to those coming within the range of office practice.

There are 16 chapters dealing with special regional or ticsular diseases and with generalities.

This is an eminently practical synopsis of the treatment of the commoner diseases of the eye, which the general practitioner should find useful almost every day, as most of the methods recommended come within his scope; but the specialist also will find many valuable hints in it. Those who wish more extensive information on the topics treated will find selected bibliographical references scattered throughout the book.

Surgical Clinics of North America

THE SURGICAL CLINICS OF NORTH AMERICA. *Chicago Number. Volume 12, Number 1, February, 1932. Philadelphia and London: W. B. Saunders Company. Issued serially one number every other month. Per clinic year (February, 1932 to December, 1932), Paper* $12.00, *Cloth* $16.00.

The February 1932 number of the Surgical Clinics of North America is a Chicago Number. There are 33 contributions altogether, from 17 clinics, most of the articles being short clinical reports.

Dr. A. Dean Bevan opens with a case of abdominal actinomycosis and also a typical case of perforated duodenal ulcer. Drs. Bevan and Abbott join in a paper on penetrating gastric ulcer. Dr. E. W. Ryerson gives three contributions on orthopedic surgery. Dr. F. B. Moorehead describes the details of tube grafts for facial deformities. The clinics of Dr. Hugh McKenna, Dr. G. E. Shambaugh and Dr. G. L. McWhorter furnish five, three and three papers respectively, two of the last concerning special methods of reconstructing the bile ducts. Dr. F. Christopher contributes three good papers "Severe Compound Comminuted Fracture of the Distal End of the Humerus," "Double Fracture of the Femur," and "Avulsion of the Tibial Spine." Two other good clinical papers are, "Intussusception," by Dr. E. Andrews and "Massive Effusion in the peritoneal Cavity" by Dr. A. H. Montgomery.

Felderman: The Human Voice

THE HUMAN VOICE; Its Care and Development. *By Leon Felderman. M.D. New York: Henry Holt and Company. 1931. Price* $2.00.

Although Dr. Felderman has entitled his book "The Human Voice," the main part of it is only indirectly associated with that subject. The work is really a general treatise on personal hygiene, and on pathologic conditions all over the body which may directly or indirectly affect the voice in any way. This enables the author to discuss, not only laryngeal conditions, rhinitis and others directly affecting the throat, but such matters as immunity, swimming, alcohol and tobacco, fatigue, fear and the like. While all these observations, based on the author's experience, are excellent and valuable things, which those who are concerned with the development of the voice for singing or other purposes should know, they seem to shoot a little wide of the mark. However, the author seems to think that in the development and care of the human voice supplementary hygienic knowledge is desirable, and no one will deny that it is. The book is intended for lay readers.

R. H. J.: The Miracle Mark

THE MEANING OF THE MARK. *The Miracle Mark of Omar, Adopted as his Guide to Health, Wealth and Happiness, in Three Versions, by R. H. J. Chicago: Larger Life Library, 19 So. LaSalle St. 1931. Price* $3.00.

Several years ago, a tiny book appeared with the brief and arresting title. "It Works!" It contained, in a few hundred words, direct instructions for molding one's life by the power of thought. Many hundreds (probably thousands) of copies have been and are being sold.

On the cover of this book, whose author's name is still represented only by initials, appeared a cryptic symbol or mark—a figure like a letter L (or a carpenter's square), with a short, horizontal bar across the vertical member.

This book is an explanation of the "Meaning of the Mark," the square representing the application of the Golden Rule, with the cross, symbolizing Christian righteousness, combined with it.

To anyone who has a mind open to new ideas, this volume is rather thrilling reading. More than that, it amplifies the instructions contained in the earlier volume, so that anyone who cares to try the plan can scarcely go wrong. Whoever thinks it is all bosh might try it to prove his point, but trying it without prejudice would be a more reasonable plan and is likely to result in pleasant experiences. "It Works!"

Hofmeister-Jüngling: Bandaging

FRANZ V. HOFMEISTER'S VERBANDTECHNIK. *Vierte Auflage. Neu bearbeitet und herausgegeben von Dr. Otto Jüngling, a.o. Prof. an der Universität Tübingen, Direktor der Chir. Abt. des Städt. Katharinenhospitals, Stuttgart. Mit 157 Abbildungen in Text. Berlin and Wien: Urban & Schwarzenberg. 1932. Price RM* 6.—.

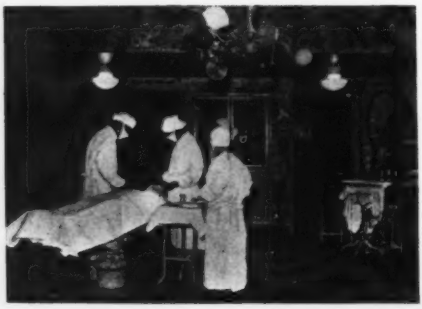
A short practical manual of the technic of preparing and applying various types of bandages and splints in the different regions of the body. It has reached its fourth edition and should be useful to surgical and other medical students and nurses who read German.

Nissen: Surgical Treatment of Pulmonary Tuberculosis

UBER DIE NEUERE ENTWICKLUNG DER CHIRURGISCHEN BEHANDLUNG DER LUNGENTUBERKULOSE. *Von Professor Dr. R. Nissen. Mit 3 Textabbildungen und 82 Abbilungen auf 16 Tafeln. Mit einem Geleitwort von F. Sauerbruch. Berlin und Wien: Urban & Schwarzenberg. 1932. Price RM* 6.—.

This monograph covers the modern development of artificial pneumothorax, thoracoplasty, extrapleural pneumothorax and other surgical methods employed in the treatment of pulmonary tuberculosis; it is very amply illustrated, especially with roentgenograms. There is an introductory commendation from Professor Sauerbruch.

MEDICAL · NEWS



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A Modern Operating Room

In the days when a surgical patient was always "dead to the world" throughout the ordeal, it did not matter how the operating room *looked*, so long as it was adequately equipped.

Now that local, spinal and infiltration anesthetics are being widely used, it is important that the surroundings shall be such as to occupy and divert the patient's mind as much as possible. This idea has been considered in planning this decidedly new type of operating room decoration at Barnes Hospital, St. Louis. One might appropriately call it "Fairly-Tale Hall."

Infant Mortality

The infant mortality rates for the birth registration area of the United States for 1930 are now available and show a general decrease, from 66.2 to 62.2 deaths for every 1,000 live births.

Among the ten largest cities, Chicago and St. Louis are tied for first place, with a rate of 54; while Boston and Pittsburgh are at the foot, with 69. Among the smallest cities (10,000 to 25,000 population), Sharewood, Wis., carries a glorious white banner with an infant mortality of ZERO.

The most healthful state for city babies is Washington, where the figure is 41, but, in general, the Pacific and Rocky Mountain States offer them the best chance for survival.

Dr. Thorek Honored

Dr. Max Thorek, of Chicago, for several years associate editor for surgery of the *Seminar* in CLINICAL MEDICINE AND SURGERY, was recently honored by King Victor Emanuel III, who conferred upon him the decoration of a Chevalier of the Order of the Crown of Italy, in token of his achievements in surgery and of twenty-five years of service to the Italians of Chicago. The presentation was made by Signor Giuseppe Castruccio, consul general, as the King's agent.

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To assist doctors in obtaining current literature published by manufacturers of equipment, pharmaceuticals, physicians' supplies, foods, etc., CLINICAL MEDICINE AND SURGERY, North Chicago, Ill., will gladly forward requests for such catalogues, booklets, reprints, etc., as are listed from month to month in this department. Some of the material now available in printed form is shown below, each piece being given a key number. For convenience in ordering, our readers may use these numbers and simply send requests to this magazine. Our aim is to recommend only current literature which meets the standards of this paper as to reliability and adaptability for physician's use.

Both the literature listed below and the service are free. In addition to this, we will gladly furnish such other information as you may desire regarding additional equipment, or medicinal supplies. Make use of this department.

When requesting literature, please specify whether you are a doctor of medicine, dentistry, medical student, or registered pharmacist, or a nurse.

Y- 47 Campho-Phenique in Major and Minor Surgery. Campho-Phenique Company.

Y- 95 Everything for the Sick. Lindsay Laboratories.

Y-120 Building Resistance — Guiatonic, William R. Warner & Co., Ltd.

Y-196 "Facts Worth Knowing." Intravenous Products Co. of America, Inc.

Y-258 Prophylaxis. August E. Drucker Co.

Y-392 Arthritis. Its Classification and Treatment. Battle & Co.

Y-410 Acidosis. A Warning Sign in Pregnancy — Alka-Zane. Wm. R. Warner & Co., Inc.

Y-456 Science Applied to Tobacco. Health Cigar Company, Inc.

Y-480 The Incidence of Eczema in Skin Diseases in about 20 percent. Bilhuber-Knoll Corp.

Y-504 Bedtime Nourishment. Mellin's Food Co.

Y-524 Balance, the Importance of the Acid-Base Equilibrium of the Body. The BiSoDol Company.

Y-545 The Etiology and Treatment of Hay Fever—Hay Fever Antigens. The National Drug Company.

Y-570 Urinary Tests and Color Charts for Practical Use in Office Diagnosis. Od Peacock Sultan Co.

Y-571 Detoxification in the Treatment of Intestinal Infections. The Wm. S. Merrell Company.

Y-579 A "Charming" New born baby Necessity. Loofash, Vegetable Sponges. "NSS" Sales Co.

Y-586 HVC (Hayden's Viburnum Compound). New York Pharmaceutical Co.

Y-587 Ethical Health Bulletin No. 1. New York Pharmaceutical Co.

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Y-589 The Therapeutic Value of Chemical Foods. Fellows Medical Mfg. Co., Inc.

Y-596 The Pneumonic Lung. Its Physical Signs and Pathology. The Denver Chemical Mfg. Co.

Y-610 Bischoff Pharmaceutical Specialties. Ernst Bischoff Co., Inc.

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Y-612 Taurocol. The Paul Plessner Co.

Y-613 Specific Urethritis — Gonoson "Riedel." Riedel & Co., Inc.

Y-617 Vitamin D needed for proper calcification and tooth health—at all ages—recent experiments show. Standard Brands Incorporated.

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Y-636 Science's latest contribution to female sex hormone therapy—Progynon. Schering Corporation.

Y-642 Ergoapiol (Smith) and Glykeron. Martin H. Smith Co.

Y-643 Rx For Increasing Resistance by Stimulating Leukocytosis, Protonuclein. Reed & Carnrick.

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Y-654 Recovery: Uneventful. Schering & Glatz, Inc.

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Y-686 Why Doctors Buy and Use "Neversslip." "NSS" Sales Co., Mfrs.

Y-687 Hypogonadism in Men—Gonad Co. (Harrower). The Harrower Laboratory, Inc.

Y-688 Prostatic Dysfunction — Prostate Co. (Harrower). The Harrower Laboratory, Inc.

Y-689 Summer Sun for Every One. Britesun, Inc.

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